OUTPUT VOLTAGES (single output modules)			
Module	Adjustment Range (Volts)	Amps	Slots
A	4.5 - 5.5	60	2
AA	4.5 - 6.2	60	2
B	4.5 - 5.5	25	1
BB	4.5 - 6.5	25	1
C	5 - 16	16[a]	1
D	18 - 29	8	1
F	9 - 15.5	33	2
G	17.5 - 29	25	2
J	30 - 48	10[b]	2
K	18 - 29	15	2
L	1.8 - 3.2	25	1
M	5 - 16	8	1
N	18 - 32	5[c]	1
Q	2.7 - 3.9	25	1
R	2.7 - 3.9	60	2
S	2.5 - 5.7	85	2
T	1.8 - 3.2	60	2
U	10 - 21	16	1
V	10 - 21	25	2
W	4.5 - 5.5	15	1
Z	4.5 - 5.5	25	1

(twin output modules)					
Module	V1 Adjustment Range (Volts)	Amps	V2 Adjustment Range (Volts)	Amps	Slots
E	5 - 16	8	5 - 16	8	1
EB	4.5 - 5.5	9	4.5 - 5.5	9	1
EQ	4.5 - 5.5	9	2.7 - 3.9	9	1
H	18 - 32	5[c]	18 - 32	5[c]	1
P	18 - 29	5	5 - 16	8	1

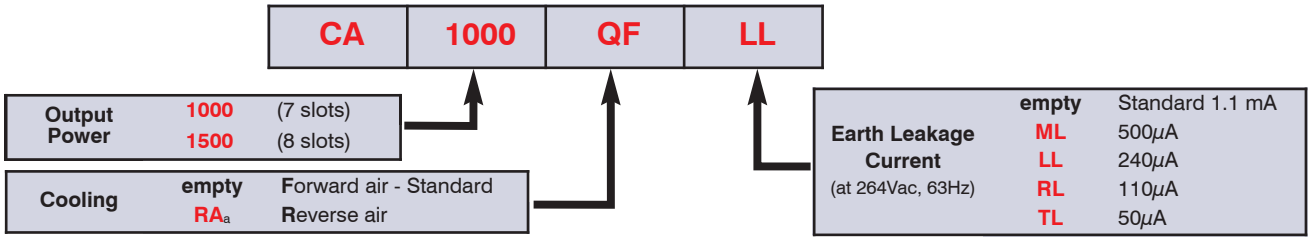
a) 12A max above 12V
b) Derate output current by 0.25A / V above 40V
c) 1A max above 29V

Alpha Configuring Guide

The extensive range of output modules and options make it possible to achieve many combinations of Volts and Amps. To achieve the optimum configuration, please contact our sales office. However you can also create your own configuration from this datasheet by using the guide below.

Configuring from Datasheet

1 Calculate total output power to determine Alpha 1000W or 1500W and select converter, then select required Cooling and Leakage Current from the following table:-



Notes:
a) Contact sales office for details

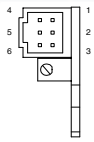
2 Select Output Modules and Options from the Output Voltages tables.
Example - if you require 5.2V / 18A with output inhibit : -
a) select B as closest match for voltage and current and prefix with voltage (e.g. **5.2B**)
b) add suffix for option (if required)
'_PA' for parallel/current share (for N+1 redundant applications)
'_PP' for parallel (increase current from one PSU)
'_IN' for inhibit
'_RP' for remote programming
'_MF' (only applicable on 1st module) for global inhibit, ac fail and 5V/50mA standby supply
c) repeat for other outputs

Ensure that the total width of all selected modules is within the slots for the chosen converter. For example:-

CA1000 5A 12/12E 24G which represents a four output 1000W Alpha with Forward air, 1.1mA Earth Leakage, with:-
Output 1 = 5V / 60A with remote sense
Output 2 = 12V / 8A
Output 3 = 12V / 8A
Output 4 = 24V / 25A with remote sense

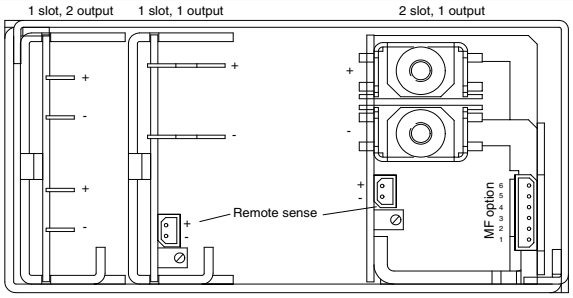
3 **Contact TDK-Lambda to validate configuration and issue a part number.**

Option Connections

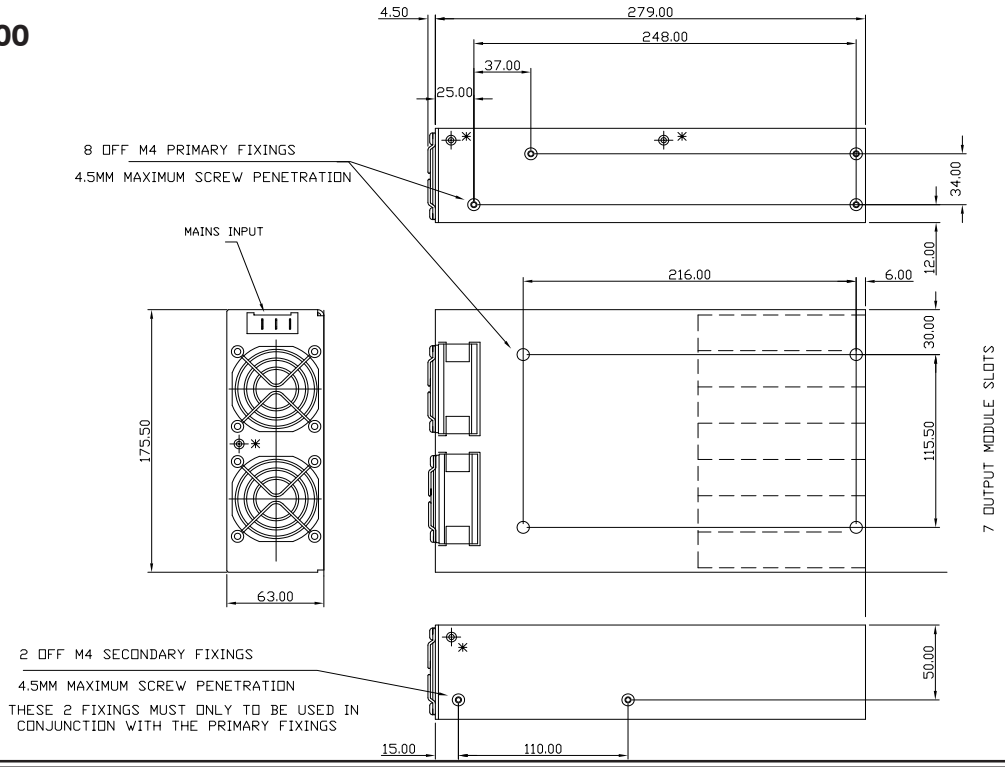


IN, PA, PP, RP Option

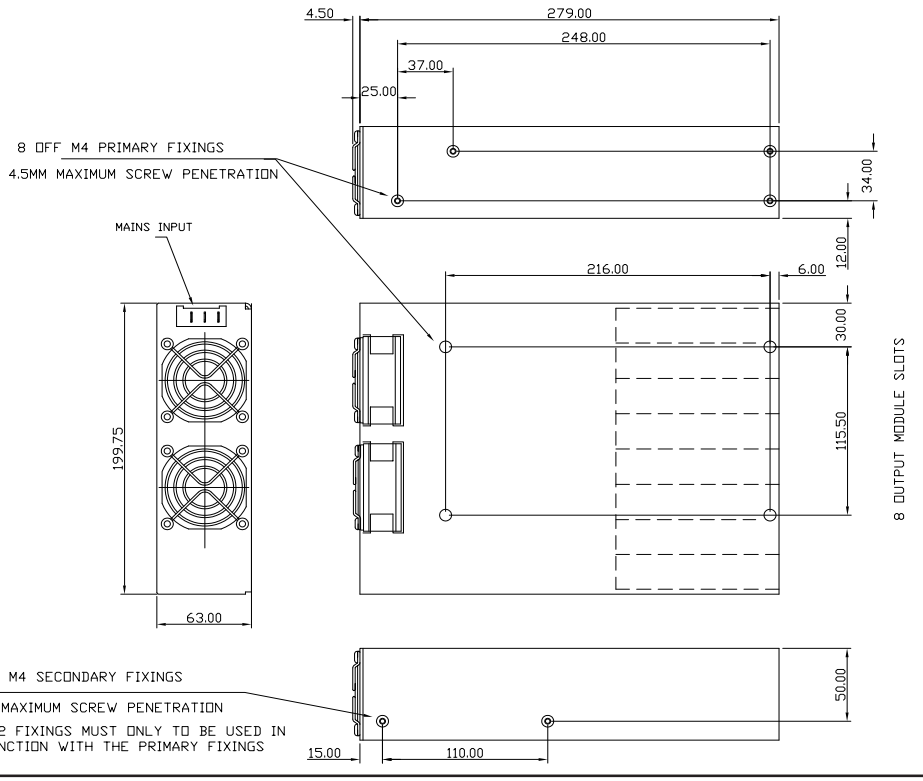
Pin	IN option	PA option	PP option	RP option	MF option
1	n/c	+ Sense	+ Sense	+ Sense	Inhibit (low)
2	Module Good	Module Good	n/c	- Sense	5V supply
3	Inhibit	Star point	n/c	Control 2	Power Fail
4	n/c	- Sense	- Sense	n/c	0V
5	- Power	- Power	n/c	Control 1	Inhibit (high)
6	- Power	Star point	n/c	n/c	n/c



Alpha 1000



Alpha 1500



Innovating Reliable Power TDK·Lambda

DIN Rail Mounting AC-DC Power Supplies and DC-DC Converters

The DPP range is a complete family of standard DIN rail mounting power supplies with output power from 15W to 960W. Models from 120W upwards can be paralleled if increased power is needed. Single phase and three phase mains inputs are catered for. The DSP range from 7.5W to 100W has a specific low profile design with standard width sizes to fit standard wall-mounted control panels. Output voltages from 5V to 48V are available in addition to the most popular 24V models. DPX models are single, dual or triple output dc-dc converters up to 60W intended to provide additional auxiliary voltages.

- Low Profile for Building Automation
- 5V to 24V Outputs
- Wide Range AC Input
- -25°C to +71°C Operation
- Convection Cooled
- UL1310 Class 2
- Class II Double Insulation

DSP Series

7.5W to 100W Low Profile
Din Rail Mount Power Supplies

Key Market Segments & Applications

Building Services Automation:	Alarms and Security, Access and Fire Safety Systems, Lighting and Environment Control Systems.

DSP Features and Benefits

Features	Benefits
• Low 56mm Profile	• Fits into wall mounted cabinets
• Wide Range AC	• Global use with no input selector switches
• Convection cooled	• No system fan required

Specifications

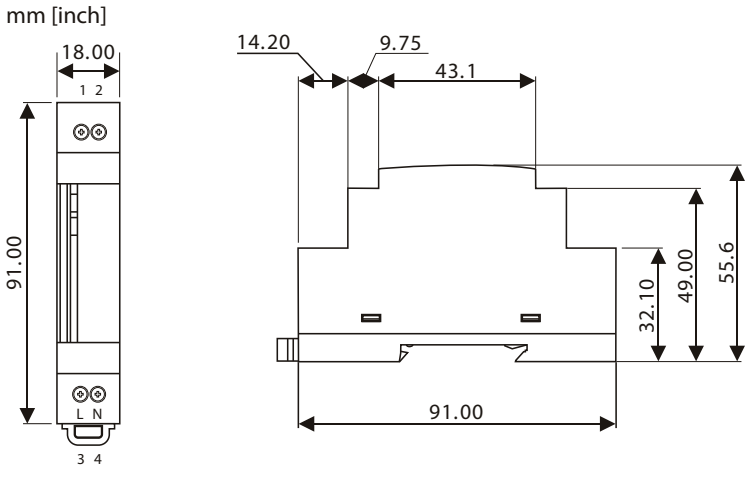
ITEMS \ MODEL		DSP10	DSP30	DSP60	DSP100
AC Input Voltage range	VAC	90 - 264VAC, Class II double insulated (No ground connection required)			
Input Frequency	Hz	47 - 63Hz			
DC Input Voltage range	VDC	120 - 370VDC			
Inrush Current (115 / 230VAC)	A	15 / 30A	25 / 50A	30 / 60A	30 / 60A
Power Factor		Meets EN61000-3-2, EN61000-3-3			
Output Voltage Accuracy	%	±1% of Nominal			
Line Regulation	%	1%			
Load Regulation	%	1%			
Ripple and Noise (20MHz BW)	mV	50mV(1)			
Overcurrent Protection (Typ)	-	110 - 160%, fold forward under short circuit (DSP100-24/C2 102-108%)			
Overvoltage Protection	V	120 - 145%			
Hold Up Time (115VAC input)	ms	See Model Selector			
LED Indicators	-	Green LED = On, Red LED = DC Output Low			
Operating Temperature	-	-25 to +71°C (Derate linearly 2.5%/°C from 55 to 71°C)			
Temperature Coefficient	%/°C	±0.02%/°C			
Storage Temperature	-	-25°C to +85°C			
Operating Humidity	-	20 - 95% RH (non condensing)			
Cooling	-	Convection			
Withstand Voltage	-	Input to Output 3kVAC for 1 min.			
Isolation Resistance	Ω	>100MΩ at 25°C & 70%RH, Input to Ground 500VDC			
Vibration (Operating)		IEC60068-2-6 (Mounting by rail: Random wave, 100-500Hz, 2G, ea. along X, Y, Z axes 10min/cycle, 60 min)			
Shock (Operating)		IEC60068-2-27 (Half sine wave, 4G, 22ms, 3 axes, 6 faces, 3 times for each face)			
Safety Agency Approvals	-	UL1310 Class 2(2), UL508 Listed, UL60950-1, EN60950-1, CE			
Immunity	-	EN61000-4-2, -3, -4, -5, -6, -8 & -11			
Conducted & Radiated EMI	-	EN55022 class B	EN55022 class A		
Weight (Typ)	g	60	200	250	320
Size (WxHxD)	mm	18 x 91 x 55.6	53 x 91x 55.6	71 x 91 x 55.6	90 x 91 x 56.8
Case material	-	Plastic			
Warranty	yrs	2			

Note 1: For DSP100-24/C2 Ripple & Noise measured with Vin 115- 230 Vac
Note 2: Excludes Models: DSP60-5, DSP60-12, DSP100-12, DSP100-15, DSP100-24

Model Selector

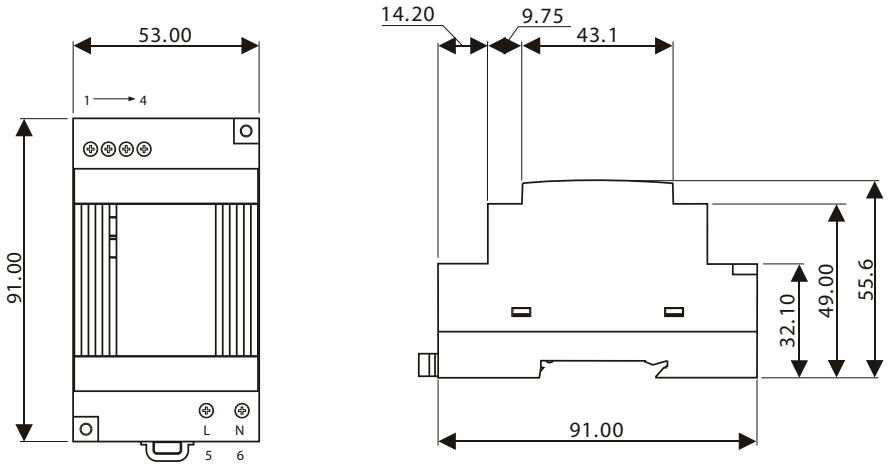
Model	Voltage (V)	Voltage Adjust (V)	Current (A)	Power (W)	Efficiency (Typ %)	HoldUp Time 115VAC in (ms)
DSP10-5	5	None	1.5	7.5	74	10
DSP30-5	5	5 - 5.5	3.0	15.0	74	25
DSP60-5	5	5 - 5.5	7.0	35.0	80	16
DSP10-12	12	None	0.83	10.0	78	10
DSP30-12	12	12 - 14	2.1	25.2	82	25
DSP60-12	12	12 - 14	4.5	54.0	84	16
DSP100-12	12	12 - 14	6.0	72.0	82	16
DSP10-15	15	None	0.67	10.1	78	60
DSP30-15	15	13.5 - 16.5	2.0	30.0	83	25
DSP60-15	15	13.5 - 16.5	4.0	60.0	85	12
DSP100-15	15	13.5 - 16.5	5.0	75.0	85	16
DSP10-24	24	None	0.42	10.1	80	60
DSP30-24	24	24 - 28	1.3	31.2	83	25
DSP60-24	24	24 - 28	2.5	60.0	86	12
DSP100-24/C2	24	20 -24.2	3.8	91.2	89	10
DSP100-24	24	24 - 28	4.2	100.8	85	10

Outline Drawing DSP10 Series



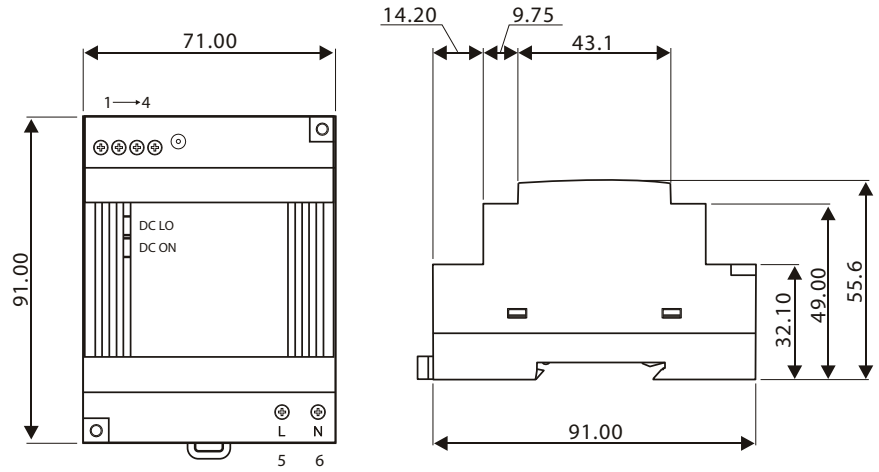
Outline Drawing DSP30 Series

mm [inch]



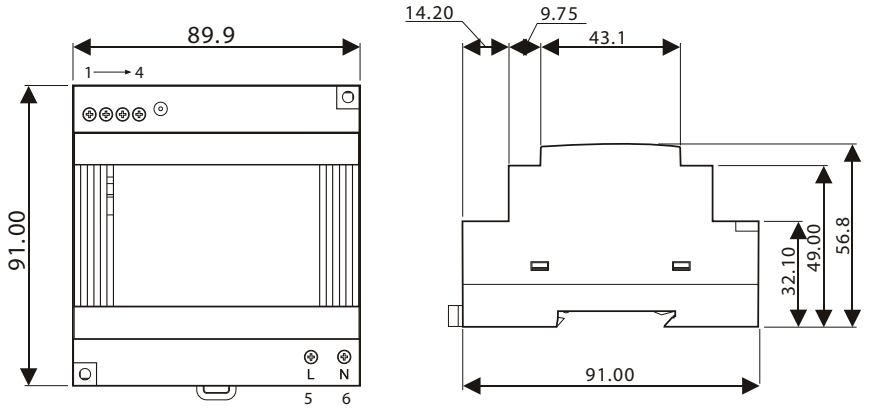
Outline Drawing DSP60 Series

mm [inch]



Outline Drawing DSP100 Series

mm [inch]



Innovating Reliable Power TDK·Lambda

- Low Cost
- 5V to 48V Outputs
- Universal Input
- Compact Size
- NEC Class 2 Compliant
- UL508 Listed
- -10°C to +71°C Operation
- RoHS Compliant

Key Market Segments & Applications

Industrial Controls:	Motor Control Systems
Factory Automation:	Process Control, Automotive, Chemical Processing
Test & Measurement:	Burn in & Test, Instrumentation Measurement

DPP15-100 Series

15-100W, 5-48V Output
DIN Rail Mount Power Supplies

DPP15-100 Features and Benefits

Features	Benefits
• PFC Compliant to EN61000-3-2	• Supports Global Use
• UL508 Approvals	• Easier System Configuration
• TS35/7.5 or TS35/15 DIN Rail Mounting	• Easy System Integration

Specifications

ITEMS / MODELS		DPP15	DPP25/30	DPP50	DPP100
AC Input Voltage range (1)	VAC	85 - 264VAC			85 - 132VAC 176 - 264VAC
Input Frequency	Hz	47 - 63Hz			
DC Input Voltage range	-	90 - 375VDC			210 - 375VDC
Inrush Current (115 / 230VAC)	A	<35A	35 / 45A	35 / 50A	35 / 55A
Power Factor	-	Meets EN61000-3-2 Class A			
Max Input Current (230VAC)	A	0.4	0.72	1.35	2.2
Output Voltage Accuracy	%	±1% (24V outputs preset at 24.5V)			
Line Regulation	%	< 0.5%			
Load Regulation	%	< 0.5%			
Ripple/Noise	mV	<50mV (20MHz Bandwith)			
Overcurrent Protection (Typ)	-	>120%			
Overvoltage Protection	V	125 - 137.5%, Cycle AC line to reset			
Hold Up Time (115VAC input)	ms	> 20ms			
Parallel switch	-	No			Yes
LED Indicator	-	Green LED = On			
Operating Temperature	-	-10°C to +71°C (Derate linearly 5%/°C from 61°C to 71°C)			
Storage Temperature	-	-25°C to +85°C			
Operating Humidity	-	20 - 90% RH (non condensing)			
Cooling (2)	-	Convection			
Withstand Voltage	-	Input to Output 3kVAC for 1 min.			
Shock	-	Half sine wave, 4G, 22ms, 3 times per face, X, Y, Z			
Vibration	-	10-500Hz (20 min sweep) 0.002G²/Hz, 1Grms acceleration X, Y, Z, 1 hour			
Isolation Resistance	Ω	>100MΩ at 25°C & 70%RH, Output to Ground 500VDC			
Safety Agency Approvals	-	UL60950-1, UL508, UL1310(3) (Class 2), EN60950-1, CE Mark			
Emissions	-	EN55011, EN55022 Class B Radiated & Conducted, EN61000-6-3			
Immunity	-	EN61000-6-2, EN61000-4-2 Level4, EN61000-4-3, EN61000-4-6 Level 3 EN61000-4-4 Level 4 (I/P) Level 3 (O/P), EN61000-4-5 Level 4, EN61000-4-8, EN61000-4-11			
Weight (Typ)	g	130	260		390
Size (WxHxD)	mm	23 x 75 x 97	45 x 75 x 91		73 x 75 x 97
Case material	-	Plastic			
MTBF (MIL-HDBK-217F, GF25)	Hours	287,000	>288,000	273,000	239,000
Warranty	yrs	2			

(1) Auto Select - DPP100 only
(2) Recommend 25mm clearance on all sides.
(3) Does not include DPP25-5 & DPP100-24 models. Evaluated to NEC NFPA70 Class 2 output per UL1310.

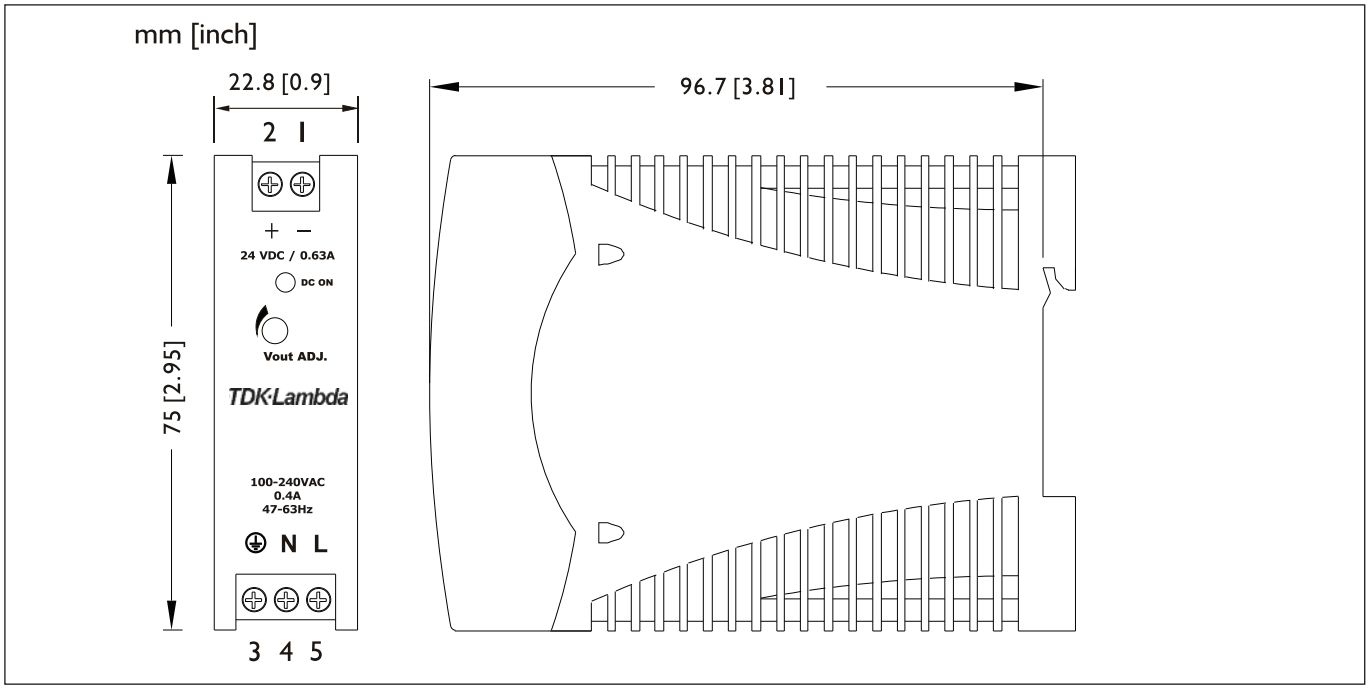
Model Selector

Model	Output Voltage (V)	Output Adjust (V)	Output Curr. (A)	Max. Output Power (W)	Efficiency at Full Load (%)
DPP25-5	5	5-6	5	25	78
DPP30-12	12	9.9-12.1	2.5	30	82
DPP50-15	15	11.9-15.1	3.4	50	85
DPP15-24	24	22.5-28.5	0.63	15	80
DPP30-24	24	22.5-28.5	1.3	30	84
DPP50-24	24	22.5-28.5	2.1	50	86
DPP100-24	24	22.5-28.5	4.2	100	87
DPP50-48	48	48-56	1.05	50	87

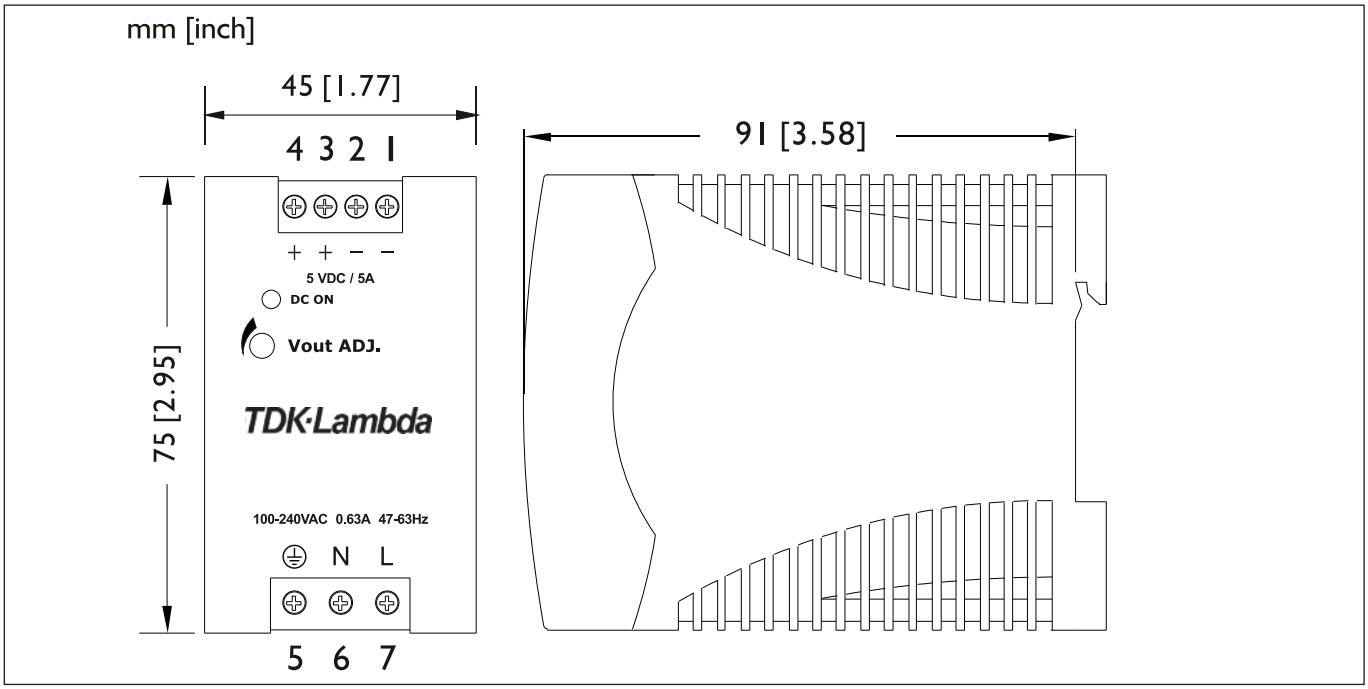
Installation

Snap-on Mounting - snap onto DIN Rail TS35/7.5 or TS35/15 (no tools required)
Cooling - Nornal Convection
Clearance - 25mm all sides
Connection - Use copper wire 0.5-2.5mm^2 (AWG24-12)

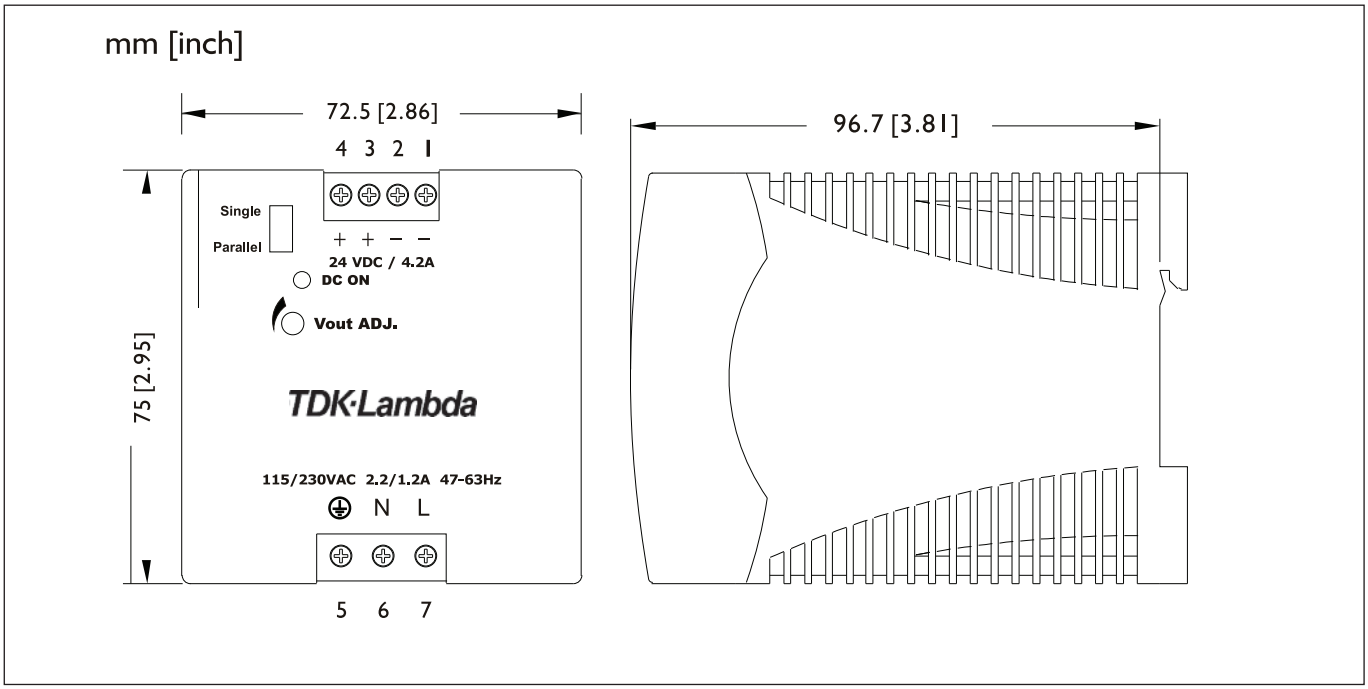
Outline Drawing DPP15 Series



Outline Drawing DPP25-DPP50 Series



Outline Drawing DPP100 Series



- Low Cost
- 12, 24 or 48V Outputs
- Wide Range AC Input
- Parallel Function Switch
- -25°C to +71°C Operation

Key Market Segments & Applications

Industrial Controls:	Motor Control Systems
Factory Automation:	Process Control, Automotive, Chemical Processing
Test & Measurement:	Burn in & Test, Instrumentation Measurement

DPP120 & 240 Series

120W & 240W Single Output
DIN Rail Mount Power Supplies

DPP120 & 240 Features and Benefits

Features	Benefits
• PFC Compliant to EN61000-3-2	• Supports Global Use
• UL508 Approvals	• Easier System Configuration
• TS35/7.5 or TS35/15 DIN Rail Mounting	• Easy System Integration

Specifications

ITEMS / MODELS		DPP120	DPP240
AC Input Voltage range	VAC	90 - 132/186-264VAC (auto select)	
Input Frequency	Hz	47 - 63Hz	
DC Input Voltage range	VDC	210 - 370VDC	
Inrush Current (115 / 230VAC)	A	24/48A	30/60A
Power Factor	-	typ 0.7 at 230VAC input	
Input Current (115/230VAC)	A	2.8/1.4A	5.4/2.2A
Output Voltage	V	12 , 24 or 48V	24 or 48V
Output Voltage Accuracy	%	-0, +1% of Nominal	
Line Regulation	%	±0.5%	
Load Regulation	%	±1% Single Mode ±5% Parallel Mode	
Ripple and Noise (20MHz BW)	mV	<50mV	<100mV
Overcurrent Protection (Typ)	-	120 - 145%	
Overvoltage Protection	V	120 - 145%	
Hold Up Time (230VAC input)	ms	>30 ms	
Efficiency (typ)	%	84 - 90% (see table)	
Parallel Operation (1)	-	Up to 3 units	
LED Indicators	-	Green LED = On, Red LED = DC Output Low	
DC Good Relay (24V model only)		-0.3A rated normally open relay contacts, closes when output is above 17.6 - 19.4V	
Operating Temperature	-	-25°C to +71°C (Derate linearly 2.5% per °C from 61°C to 71°C)	
Storage Temperature	-	-25°C to +85°C	
Operating Humidity	-	20 - 95% RH (non condendsing)	
Cooling	-	Convection	
Withstand Voltage	-	Input to Output 3kVAC for 1 min.	
Isolation Resistance	Ω	>100MΩ at 25°C & 70%RH, Output to Ground 500VDC	
Vibration (Operating)		IEC 60068-2-6 (Mounting by rail: Random wave, 10-500 Hz, 2G, ea. along X, Y, Z axes 10 min/cycle, 60 min)	
Shock (Operating)		IEC 60068-2-27 (Half sine wave, 4G, 22ms, 3 axes, 6 Faces, 3 times for each face)	
Safety Agency Approvals	-	UL508 Listed, UL60950-1, EN60950-1, CE	
Conducted & Radiated EMI	-	EN55022 class B	
Weight (Typ)	g	920	1000
Size (HxWxD)	mm	125 x 63.5 x 123.6	125 x 83 x 126
Case material	-	Metal	
Warranty	yrs	2	

Notes: **(1)** For parallel operations a minimum 10% load is required - loading conditions 0.1Io min to 0.9Io max

Model Selector

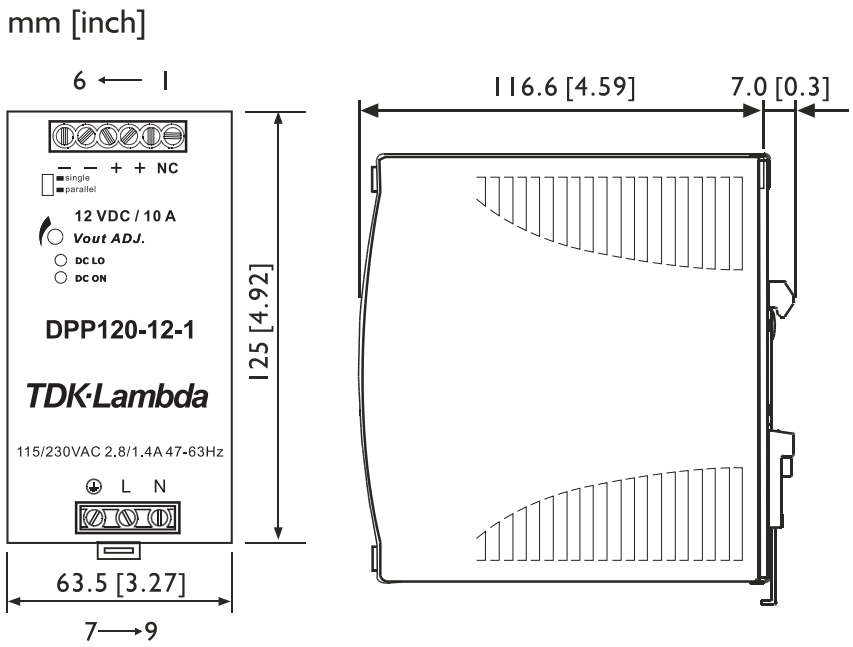
Model	Voltage (V)	Voltage Adjust (V)	Current (A)	Power (W)	Effic. (typ) %
DPP120-12	12	11.4 - 14.5	10	120	84
DPP120-24	24	22.5 - 28.5	5	120	86
DPP120-48	48	45 - 55	2.5	120	87
DPP240-24	24	22.5 - 28.5	10	240	89
DPP240-48	48	47 - 56	5	240	90

For plug type connectors add suffix **'B'** to part number

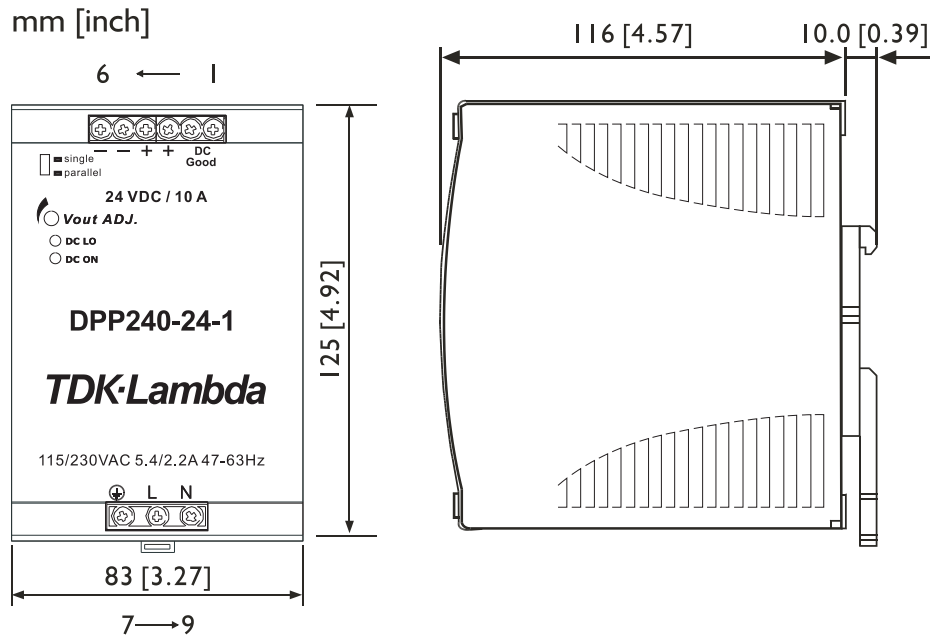
PIN Assignments

Pin#	Function
1	DC Good Relay
2	DC Good Relay
3	V+
4	V+
5	V-
6	V-
7	GND
8	L
9	N

Outline Drawing DPP120



Outline Drawing DPP240



- Low Cost
- 24 or 48V Outputs
- Wide Range AC Input
- Active PFC
- Parallel Function Switch
- -25°C to +71°C Operation

DPP480 Series

480W Single Output
DIN Rail Mount Power Supplies

Key Market Segments & Applications

Key Market Segments & Applications

Industrial Controls:	Motor Control Systems
Factory Automation:	Process Control, Automotive, Chemical Processing
Test & Measurement:	Burn in & Test, Instrumentation Measurement

DPP480 Features and Benefits

Features	Benefits
• PFC Compliant to EN61000-3-2	• Supports Global Use
• UL508 Approvals	• Easier System Configuration
• TS35/7.5 or TS35/15 DIN Rail Mounting	• Easy System Integration

Specifications

ITEMS / MODELS		DPP480-24-1	DPP480-48-1
AC Input Voltage range	VAC	90 - 264VAC	
Input Frequency	Hz	47 - 63Hz	
DC Input Voltage range	VDC	120 - 370VDC	
Inrush Current (115 / 230VAC)	A	25 / 50A	
Power Factor	-	Meets EN61000-3-2 Class A, typ 0.99 at 230VAC input	
Input Current (115/230VAC)	A	7 / 3.5A	
Output Voltage	V	24V	48V
Output Current	A	20A	10A
Output Voltage Adjustment Range	-	22.5 - 28.5V	47 - 56V
Output Voltage Accuracy	%	-0, +1% of Nominal	
Line Regulation	%	±0.5%	
Load Regulation	%	±0.5% (±5% when set in parallel mode)	
Ripple and Noise (20MHz BW)	mV	100mV	
Overcurrent Protection (Typ)	-	120 - 140%	
Overvoltage Protection	V	30 - 33V	57 - 63V
Hold Up Time (115VAC input)	ms	> 30ms	
Efficiency (typ)	%	89%	90%
Parallel operation	-	Set in single or parallel (droop) mode - maximum of 3 units	
LED Indicators	-	Green LED = On, Red LED = DC Output Low	
DC Good Relay (24V model only)	-	0.3A rated normally open relay contacts, closes when output is above 17.6 - 19.4V	
Operating Temperature	--	-25°C to +71°C (Derate linearly 2.5%/°C from 56°C to 71°C)(2)	
Storage Temperature	-	-25°C to +85°C	
Operating Humidity	-	20 - 95% RH (non condensing)	
Cooling (1)	-	Convection	
Withstand Voltage	-	Input to Output 3kVAC for 1 min.	
Isolation Resistance	Ω	>100MΩ at 25°C & 70%RH, Output to Ground 500VDC	
Safety Agency Approvals	-	UL508 Listed, UL60950-1, EN60950-1, CE	
Conducted & Radiated EMI	-	EN55022 class B	
Weight (Typ)	g	1920g	
Size (WxHxD)	mm	175 x 125 x 123	
Case material	-	Metal	
Warranty	yrs	2	

Notes:
(1) Recommend 1" clearance on all sides
(2) Derating curve applies for input of 110V and above. For 90V input derating at 4% per deg

Model Selector

Model	Output Voltage (V)	Output Adjust (V)	Output Curr. (A)	Max. Output Power (W)	Efficiency at Full Load (%)
DPP480-24-1	24	22.5 - 28.5	20	480	89
DPP480-48-1	48	47.0 - 56.0	10	480	90

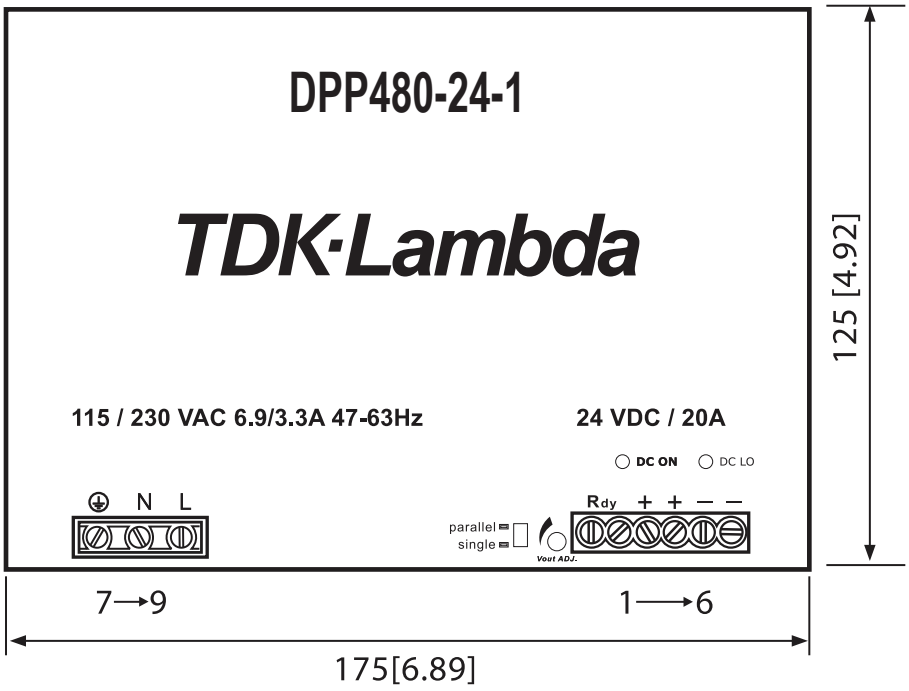
For plug type connectors add suffix **'B'** to part number

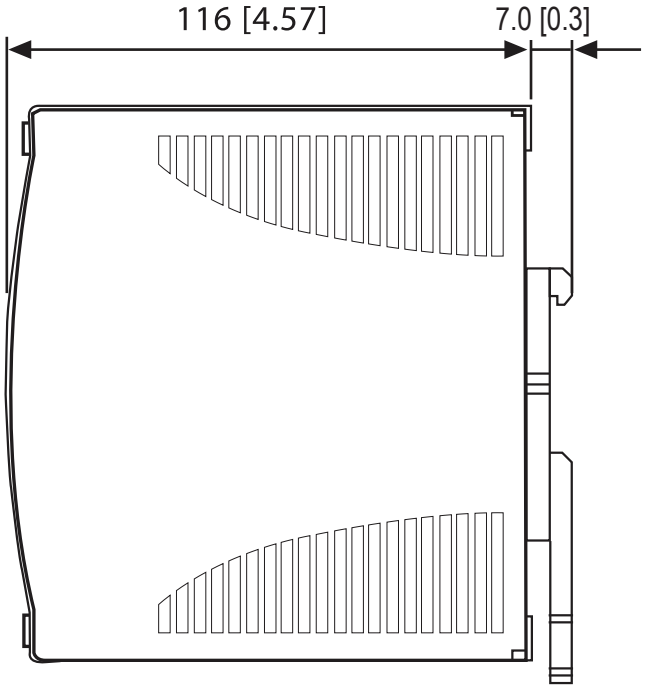
PIN Assignments

Pin#	Function
1	DC Good Relay
2	DC Good Relay
3	V+
4	V+
5	V-
6	V-
7	GND
8	N
9	L

Outline Drawing DPP480 Series

Dimensions are in millimeters (inches)





Innovating Reliable Power TDK·Lambda

- Low Cost
- 12V, 24V or 48V Outputs
- Wide Range 340 to 575VAC Input
- Parallel Function Switch (240 & 480W)
- Current Share (960W)
- -25°C to +71°C Operation
- Convection Cooled

Key Market Segments & Applications

Industrial Controls:	Motor Control Systems
Factory Automation:	Process Control, Automotive, Chemical Processing
Test & Measurement:	Burn in & Test, Instrumentation Measurement

DPP120 - 960 Series

120W, 240W, 480W & 960W

3 Phase DIN Rail Mount Power Supplies

DPP120 - 960 Features and Benefits

Features	Benefits
• PFC Compliant to EN61000-3-2	• Supports Global Use
• UL508 Approvals	• Easier System Configuration
• TS35/7.5 or TS35/15 DIN Rail Mounting	• Easy System Integration

Specifications

ITEMS / MODELS		DPP120-xx-3	DPP240-xx-3	DPP480-xx-3	DPP960-xx-3
AC Input Voltage range (1)	VAC	340 - 575VAC, three phase			
Input Frequency	Hz	47 - 63Hz			
DC Input Voltage range	VDC	480 - 820VDC			
Inrush Current (380-480VAC) (typ)	A	10A	20A	20A	30A
Power Factor (2)	-	0.55	0.55	0.65	0.8
Input Current (400VAC) (typ)	A	0.36A	0.65A	1.1A	1.72A
Output Voltage Accuracy	%	-0, +1% of Nominal			
Line Regulation	%	±1%			
Load Regulation	%	±1%	±1% (±5% when set in parallel mode)		
Ripple and Noise (20MHz BW)	mV	100mV	100mV	100mV	80mV
Overcurrent Protection (Typ)	-	115 - 135%	120 - 140%	110 - 135%	110 - 130%
Overvoltage Protection	V	See model selector			
Overtemperature Protection	-	Yes, auto recovery			
Hold Up Time (380-480VAC)	ms	> 20ms	> 20ms	> 20ms	> 15ms
Parallel operation (up to 90% load)	-	Set in parallel (droop) mode - up to 2 units			
LED Indicators	-	Green LED = On, Red LED = DC Output Low			
DC Good Relay (24V models only)	-	0.3A rated normally open relay contacts, closes when output is above 17.6 - 19.4V			
Operating Temperature	-	-25°C to +71°C (Derate linearly 2.5%/°C from 61°C to 71°C, 3.5%/°C for DPP960)			
Storage Temperature	-	-25°C to +85°C			
Operating Humidity (non condensing)	-	20 - 95% RH			
Cooling	-	Convection. Recommend 25mm clearance on all sides			
Withstand Voltage	-	Input to Output 3kVAC, Input to Ground 1.5kVAC for 1 min.			
Isolation Resistance	Ω	>100MΩ at 25°C & 70%RH, Output to Ground 500VDC			
Vibration	-	IEC 60068-2-6. 10- 500Hz, 2G on X, Y & Z axes			
Shock	-	IEC 60068-2-27. Half sinewave, 4G, 22ms, 3 times each face			
Safety Agency Approvals	-	UL508 Listed, UL60950-1, EN60950-1, CE			
Conducted & Radiated EMI	-	EN55022 class B			
Immunity	-	IEC 61000-4-2, -3, 4, -5, -6. -8, -11			
Weight (Typ)	g	800	1100	1720	3400g
Size (WxHxD)	mm	74.3 x 124 x 111.9	89 x 124 x 111.9	150 x 124 x 111.9	275.8 x 126.2 x 111.9
Switching Frequency	kHz	70	25	80	52
MTBF (Bellcore Issue 6 @ 40°C, GB)	Hours	527,000	488,000	411,000	352,000
Case material	-	Metal			
Warranty	yrs	2			

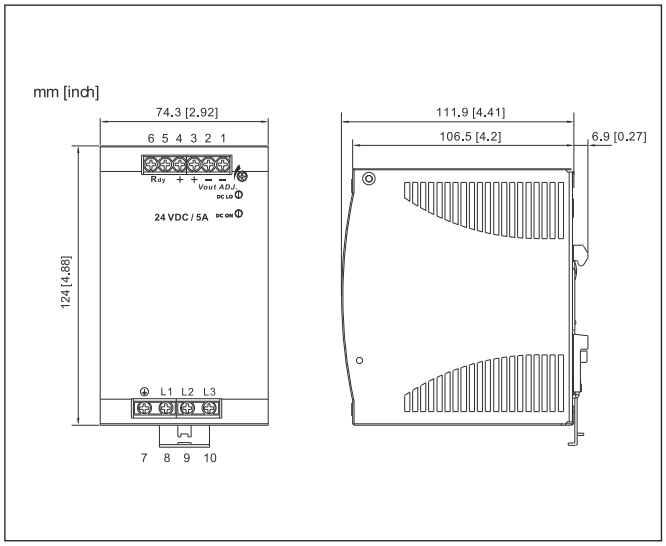
Model Selector

Model	Voltage (V)	Adjust Range (V)	Output Current (A)	Overvoltage (V)	Efficiency (%)
DPP120-12-3	12V	11.4 - 14.5V	10A	14.5 - 17.4V	87%
DPP120-24-3	24V	22.5 - 28.5V	5A	30 - 33V	89%
DPP240-24-3	24V	22.5 - 28.5V	10A	30 - 33V	90%
DPP480-24-3	24V	22.5 - 28.5V	20A	30 - 33V	90%
DPP960-24-3	24V	22.5 - 28.5V	40A	30 - 33V	92%
DPP240-48-3	48V	47 - 56V	5A	60 - 68V	91%
DPP480-48-3	48V	47 - 56V	10A	60 - 68V	91%
DPP960-48-3	48V	47 - 56V	20A	60 - 68V	93%

See Notes from Page 1

(1) Bi phase input is permissible, but output load must be derated to 75%
(2) Passive, meets EN61000-3-2

Outline Drawing DPP120



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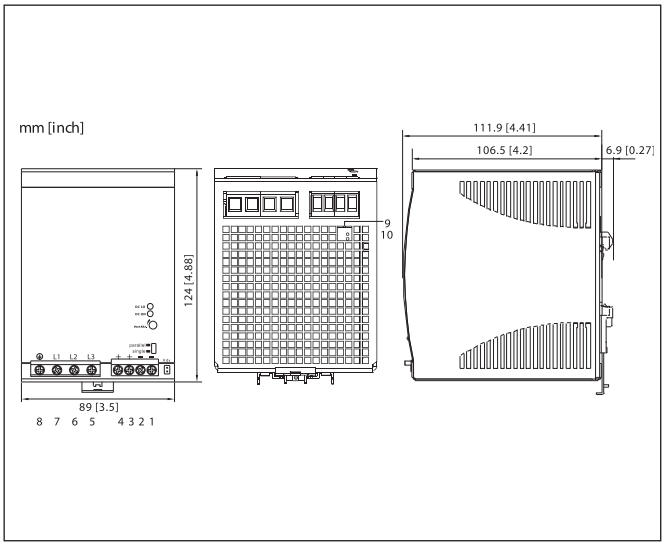
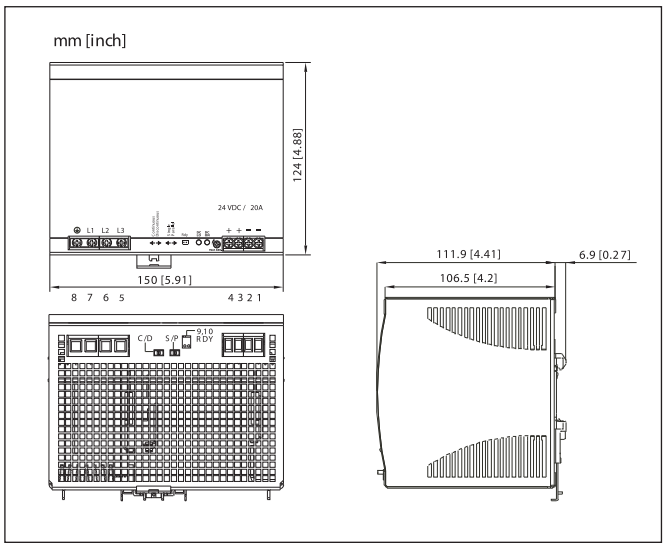
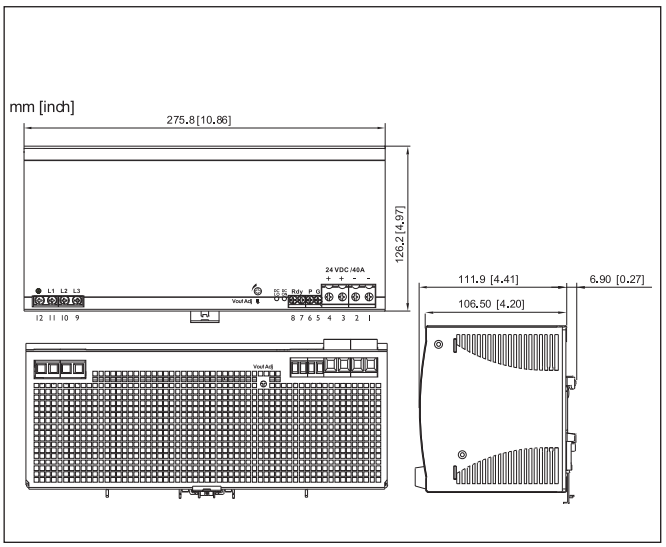


Outline Drawing DPP480



Outline Drawing DPP960



Snap-on Mounting: snap onto DIN Rail TS35/7.5 or TS35/15. (no tools required)

Innovating Reliable Power TDK·Lambda

- Single and dual output
- 2:1 and 4:1 Input Ranges
- Meet EN55022 Class B
- Input fuse protection
- Input reverse polarity protection
- Overload and short circuit protection
- Over voltage protection
- Reliable snap-on for DIN rail TS-35/7.5 or TS-35/15
- I/O-isolation 1600 VDC
- Output DC-OK indicator

DPX Series

15 - 60W Din Rail Mount DC-DC Converters

Key Market Segments & Applications

Communication Systems, Industry Control Systems
Factory Automation, Semiconductor Equipment

The DPX Series offers a very broad range of DC/DC converters suitable for DIN-Rail mounting. The DPX DIN-Rail power supplies are available with a choice of output voltages from 3.3 to ±15 V. There are 5 power levels starting from 15 W up to 60 W with input voltages from 9.5 to 75 V offering a convenient solution for additional DIN-Rail mounted auxiliary voltages. A narrow 25 mm rugged metal case takes up minimal DIN-Rail space.

Model Selector

Model DPX15	Input Range	Output Voltage	Output Current Min Load	Output Current Full Load
DPX15-24WS3P3	9.5 - 36 VDC	3.3 VDC	0mA	4500mA
DPX15-24WS05	9.5 - 36 VDC	5 VDC	0mA	3000mA
DPX15-24WS5P1	9.5 - 36 VDC	5.1 VDC	0mA	3000mA
DPX15-24WS12	9.5 - 36 VDC	12 VDC	0mA	1250mA
DPX15-24WS15	9.5 - 36 VDC	15 VDC	0mA	1000mA
DPX15-24WD05	9.5 - 36 VDC	±5 VDC	0mA	±1500mA
DPX15-24WD12	9.5 - 36 VDC	±12 VDC	0mA	±625mA
DPX15-24WD15	9.5 - 36 VDC	±15 VDC	0mA	±500mA
DPX15-48WS3P3	18 - 75 VDC	3.3 VDC	0mA	4500mA
DPX15-48WS05	18 - 75 VDC	5 VDC	0mA	3000mA
DPX15-48WS5P1	18 - 75 VDC	5.1 VDC	0mA	3000mA
DPX15-48WS12	18 - 75 VDC	12 VDC	0mA	1250mAF
DPX15-48WS15	18 - 75 VDC	15 VDC	0mA	1000mA
DPX15-48WD05	18 - 75 VDC	± 5 VDC	0mA	± 1500mA
DPX15-48WD12	18 - 75 VDC	± 12VDC	0mA	± 625mA
DPX15-48WD15	18 - 75 VDC	± 15 VDC	0mA	± 500mA

Model Selector

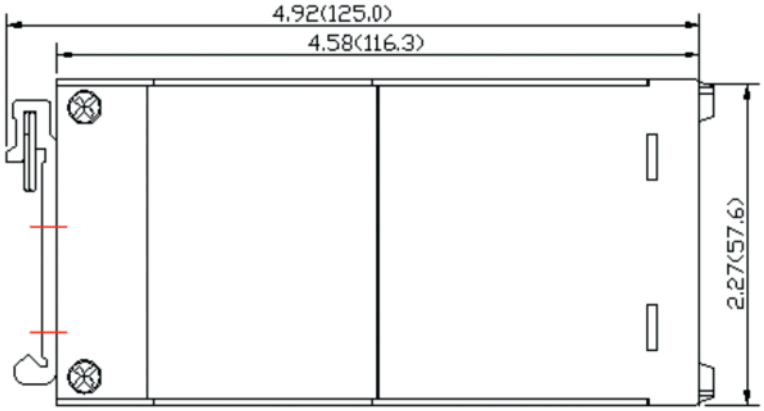
Model DPX20	Input Range	Output Voltage	Output Current Min Load	Output Current Full Load
DPX20-24WS3P3	9.5 - 36 VDC	3.3 VDC	0mA	5500mA
DPX20-24WS05	9.5 - 36 VDC	5 VDC	0mA	4000mA
DPX20-24WS12	9.5 - 36 VDC	12 VDC	0mA	1670mA
DPX20-24WS15	9.5 - 36 VDC	15 VDC	0mA	1330mA
DPX20-24WD05	9.5 - 36 VDC	±5 VDC	0mA	±2000mA
DPX20-24WD12	9.5 - 36 VDC	±12 VDC	0mA	±833mA
DPX20-24WD15	9.5 - 36 VDC	±15 VDC	0mA	±667mA
DPX20-48WS3P3	18 - 75 VDC	3.3 VDC	0mA	5500mA
DPX20-48WS05	18 - 75 VDC	5 VDC	0mA	4000mA
DPX20-48WS12	18 - 75 VDC	12 VDC	0mA	1670mA
DPX20-48WS15	18 - 75 VDC	15 VDC	0mA	1330mA
DPX20-48WD05	18 - 75 VDC	±5 VDC	0mA	±2000mA
DPX20-48WD12	18 - 75 VDC	±12 VDC	0mA	±833mA
DPX20-48WD15	18 - 75 VDC	±15 VDC	0mA	±667mA
Model DPX 30				
DPX30-24WS3P3	10 - 40 VDC	3.3 VDC	0mA	6000mA
DPX30-24WS05	9.5 - 36 VDC	5 VDC	0mA	6000mA
DPX30-24WS12	10 - 40 VDC	12 VDC	0mA	2500mA
DPX30-24WS15	10 - 40 VDC	15 VDC	0mA	2000mA
DPX30-24WD12	10 - 40 VDC	±12 VDC	0mA	±1250mA
DPX30-24WD15	10 - 40 VDC	±15 VDC	0mA	±1000mA
DPX30-48WS3P3	18 - 75 VDC	3.3 VDC	0mA	6000mA
DPX30-48WS05	18 - 75 VDC	5 VDC	0mA	6000mA
DPX30-48WS12	18 - 75 VDC	12 VDC	0mA	2500mA
DPX30-48WS15	18 - 75 VDC	15 VDC	0mA	2000mA
DPX30-48WD12	18 - 75 VDC	±12 VDC	0mA	±1250mA
DPX30-48WD15	18 - 75 VDC	±15 VDC	0mA	±1000mA

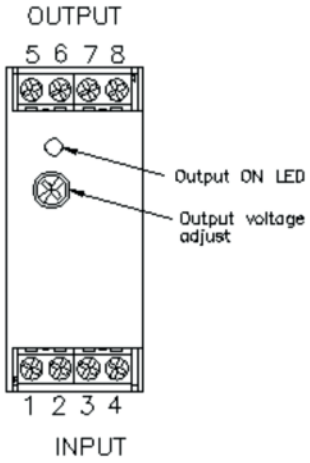
Model Selector

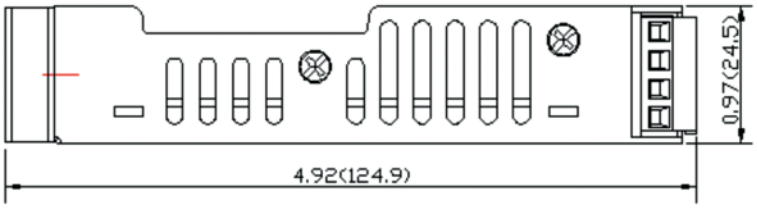
Model DPX40	Input Range	Output Voltage	Output Current Min Load	Output Current Full Load
DPX40-24WS3P3	9.5 - 36 VDC	3.3 VDC	0mA	10000mA
DPX40-24WS05	9.5 - 36 VDC	5 VDC	0mA	8000mA
DPX40-24WS12	9.5 - 36 VDC	12 VDC	50mA	3333mA
DPX40-24WS15	9.5 - 36 VDC	15 VDC	50mA	2666mA
DPX40-24WD12	9.5 - 36 VDC	±12 VDC	±65mA	±1667 mA
DPX40-24WD15	9.5 - 36 VDC	±15 VDC	±50mA	±1333mA
DPX40-48WS3P3	18 - 75 VDC	3.3 VDC	0mA	1000mA
DPX40-48WS05	18 - 75 VDC	5 VDC	0mA	8000mA
DPX40-48WS12	18 - 75 VDC	12 VDC	50mA	3333mA
DPX40-48WS15	18 - 75 VDC	15 VDC	50mA	2666mA
DPX40-48WD12	18 - 75 VDC	±12 VDC	±65mA	±1667mA
DPX40-48WD15	18 - 75 VDC	±15 VDC	±60mA	±1333mA
DPX40 Triple Output				
DPX40-12T3312	9.5 - 18 VDC	3.3 ±12VDC	600mA ±40mA	6000mA ±400mA
DPX40-12T3315	9.5 - 18 VDC	3.3 ±15VDC	600mA ±30mA	6000mA ±300mA
DPX40-12T0512	9.5 - 18 VDC	5.0 ±12VDC	600mA ±40mA	6000mA ±400mA
DPX40-12T0512	9.5 - 18 VDC	5.0 ±15VDC	600mA ±30mA	6000mA ±300mA
DPX40-24T3312	18 - 36 VDC	3.3 ±12VDC	600mA ±40mA	6000mA ±400mA
DPX40-24T3315	18 - 36 VDC	3.3 ±15VDC	600mA ±30mA	6000mA ±300mA
DPX40-24T0512	18 - 36 VDC	5.0 ±12VDC	600mA ±40mA	6000mA ±400mA
DPX40-24T0515	18 - 36 VDC	5.0 ±15VDC	600mA ±30mA	6000mA ±300mA
DPX40-48T3312	36 - 75 VDC	3.3 ±12VDC	600mA ±40mA	6000mA ±400mA
DPX40-48T3315	36 - 75 VDC	3.3 ±15VDC	600mA ±30mA	6000mA ±300mA
DPX40-48T0512	36 - 75 VDC	5.0 ±12VDC	600mA ±40mA	6000mA ±400mA
DPX40-48T0515	36 - 75 VDC	5.0 ±15VDC	600mA ±30mA	6000mA ±300mA
DPX60				
DPX60-24S3P3	18 - 36 VDC	3.3 VDC	0mA	14000mA
DPX60-24S05	18 - 36 VDC	5 VDC	0mA	12000mA
DPX60-24S12	18 - 36 VDC	12 VDC	0mA	5000mA
DPX60-24S15	18 - 36 VDC	15 VDC	0mA	4000mA
DPX60-48S3P3	36 -75 VDC	3.3 VDC	0mA	14000mA
DPX60-48S05	36 -75 VDC	5 VDC	0mA	12000mA
DPX60-48S12	36 -75 VDC	12 VDC	0mA	5000mA
DPX60-48S15	36 -75 VDC	15 VDC	0mA	4000mA

For full data and drawings please visit
www.emea.tdk-lambda.com/dpx

Outline Drawing DPX20W Series





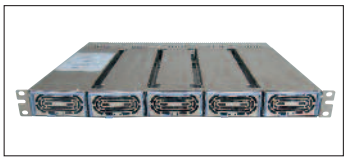


All dimensions in inches (mm)
Tolerance: X. XX ± 0.04 (X.X±1.0)
X. XXX± 0.02 (X.XX±0.5)

Hot Swap Front End AC-DC Power Supplies

Ideal for any application utilising distributed power architecture or requiring hotswap pluggable ac-dc power supplies. 12V, 24V, 32V and 48V models are available as well as 1U racks with split outputs for applications other than standard parallel bulk power connection. The HFE range offers high reliability, high efficiency and high power density with up to 10kW possible in a 1U rack and has a PMBus interface option. Flexible control over output voltage and current limit is possible. These products are widely used in broadcast transmitters, industrial lasers, LED display systems and in the oil and gas industry.

FPS1000 Series 864 -1008W Single Output — Page No. 157



HFE1600/2500 Series 1584W - 2500W Single Output — 160

- 1U High
- Up to 3000W (3 units) in 19" Rack
- Hotswap capable (Oring Diodes Built In)
- Low Cost
- PoE Option

Key Market Segments & Applications

Power for Distributed Power Architecture
Factory Automation
RF Amplifiers

FPS1000 Series

1000W Front End
Power Supplies

FPS Features and Benefits

Features	Benefits
• 1U High	• Lower Cost of Ownership
• Hotswap capable	• Suitable for N+1 Redundancy
• High Efficiency	• Less Heat Dissipated in System
• Full Array of Signals	• Easier System Monitoring

Specifications

ITEMS / MODELS			12V Nominal	24V Nominal	32V Nominal	48V Nominal
Output Voltage Range	(1)	V	10.5 - 13.2V	21.5 - 29V	28.8 - 38.4V	43 - 58V
Output Current		A	72A	40A	31A	21A
Line Regulation		-	<0.4%			
Load Regulation		-	<0.8%			
Output Noise		mV	150mV	200mV	250mV	300mV
Overvoltage Protection		V	14.3 to 15.7V	31 to 34V	41.5V to 45.5V	62 to 66V
Overcurrent Protection		-	105 - 125%, Constant Current type			
Load Sharing		-	Single wire current sharing, up to 8 units			
Remote Sense		-	Compensates for 1V on each output lead			
I²C Monitoring		-	Optional (Specify /S)			
Signals (opto isolated)		-	DC OK, AC Fail, and Over temperature warning, high on fail			
Remote On/Off		-	On: 0 - 0.6V or short, Off: 2- 15V or open			
Auxiliary Output		-	11.2-12.5VDC 0.25A			
AC Input	(2)	-	85 - 265VAC, 47 - 63Hz², 120-360VDC. (Derate 10% < 100VAC)			
Leakage Current		mA	<1.1mA at 230VAC input			
Inrush Current		A	<40A			
Hold up time (100VAC input)		-	20ms typical (at 80% rated load)			
Efficiency (typ) 100/200VAC		-	81 / 83%	84 / 86%	84 / 86%	85 / 88%
Power Factor Correction		-	EN61000-3-2 class A (20-100% load), >0.98 at full load			
Immunity		-	EN61000-4-2, -3, -4, -5, -6, -11			
EMC (conducted and radiated)		-	EN55022, level B, FCC Class B			
Operating Temperature		°C	0°C to +70°C, derate 2%/°C from 50°C to 60°C, 2.5%/°C from 60°C to 70°C			
Storage Temperature		°C	-30°C to +85°C			
Withstand Voltage		-	Input to Output 3kVAC, Input to Ground 2kVAC, Output to Ground 500VAC for 1 min.			
Cooling		-	Two internal fans, airflow from front to back (variable speed)			
Humidity		-	Operating: 10 - 90% RH, Storage: 10 - 95% RH (non condensing)			
Shock & Vibration		-	Built to meet ETS 300 019			
Safety Agency		-	UL60950-1, EN60950-1, CE Mark			
Input / Output Connector		-	Positronic PCIB24W9M400A1 (Mating #PCIB24W9F400A1)			
Front panel indicators		-	AC OK, DC OK, DC Fail			
Size (HxWxL)		mm	Stand alone: 41 x 127 x 290; Rack: 44 x 400 x 351			
Weight		g	2,000			
Warranty		yr	2			

Note 1 Via Trim pin on output connector

Note 2 47-440Hz with reduced PFC (100-265VAC)

Innovating Reliable Power TDK·Lambda

Model Selector

Front AC Input Panel Configuration	Output Voltage	Output Current	Max Power	I²C Interface
FPS100012/P	12V	72A	864W	No
FPS100012/PS	12V	72A	864W	Yes
FPS100024/P	24V	40A	960W	No
FPS100024/PS	24V	40A	960W	Yes
FPS100032/P	32V	31A	992W	No
FPS100032/PS	32V	31A	992W	Yes
FPS100048/P	48V	21A	1008W	No
FPS100048/PS	48V	21A	1008W	Yes
FPSS1U/P	Rack (3 slot), contains two blanking panels			
FPST1U/P	Rack with 3 individual outputs (floating)			

Rear AC Input Panel Configuration	Output Voltage	Output Current	Max Power	I²C Interface
FPS100012	12V	72A	864W	No
FPS100012/S	12V	72A	864W	Yes
FPS100024	24V	40A	960W	No
FPS100024/S	24V	40A	960W	Yes
FPS100032	32V	31A	992W	No
FPS100032/S	32V	31A	992W	Yes
FPS100048	48V	21A	1008W	No
FPS100048/S	48V	21A	1008W	Yes
FPSS1U	Rack (3 slot), contains two blanking panels			
FPST1U	Rack with 3 individual outputs (floating)			

Options

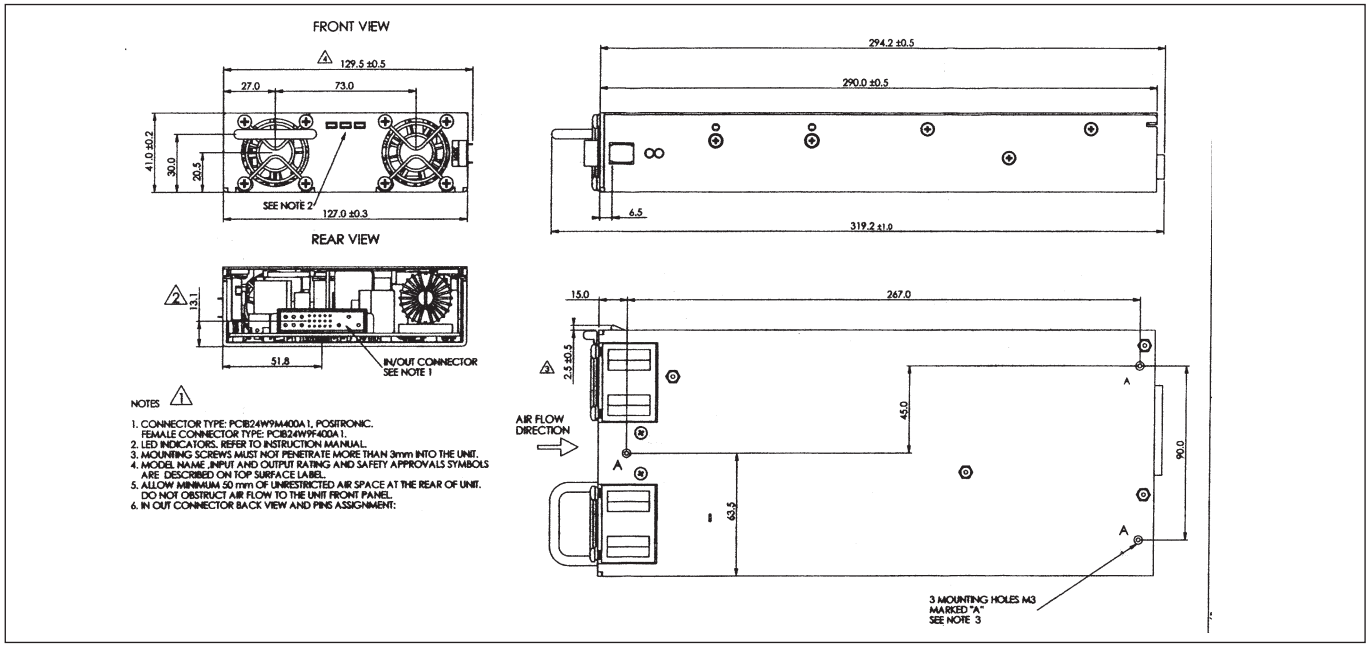
Suffix	Description
/POE*	1500VAC Output to Ground Isolation (output noise 400mV)

*FPS100048 only

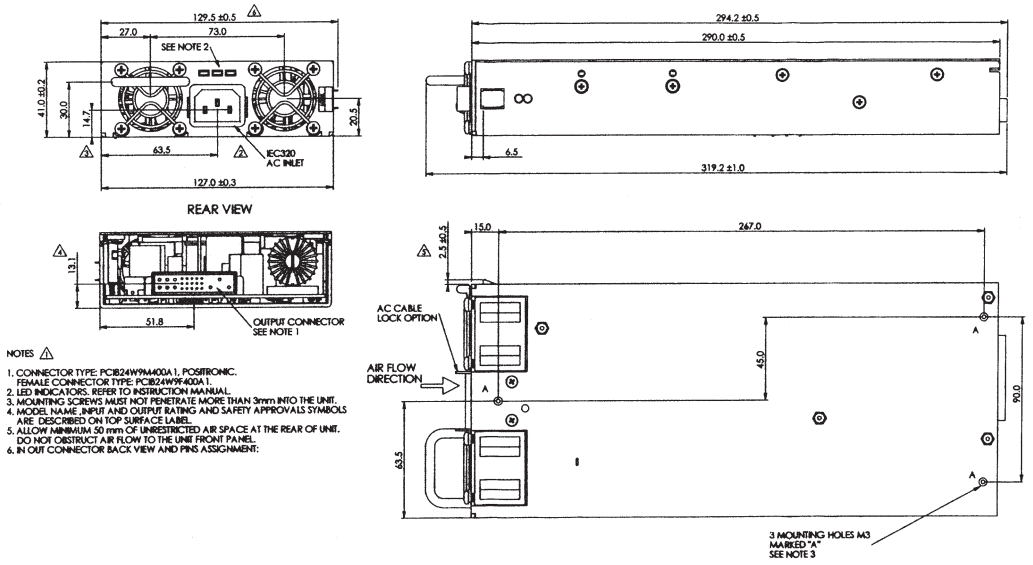
Full System (3 Modules & FPS s1U rack)

FPS3000 -	XX	/ X	
	12	BLANK	= Standard
	24	S	= I²C
	32	P	= FRONT AC INPUT
	48		

Outline Drawing FPS1000 Series

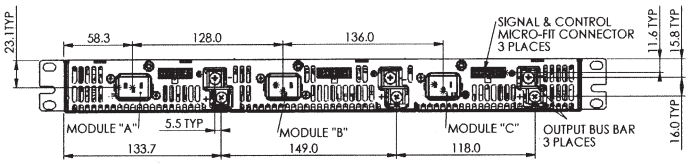


Outline Drawing FPS1000/P Series

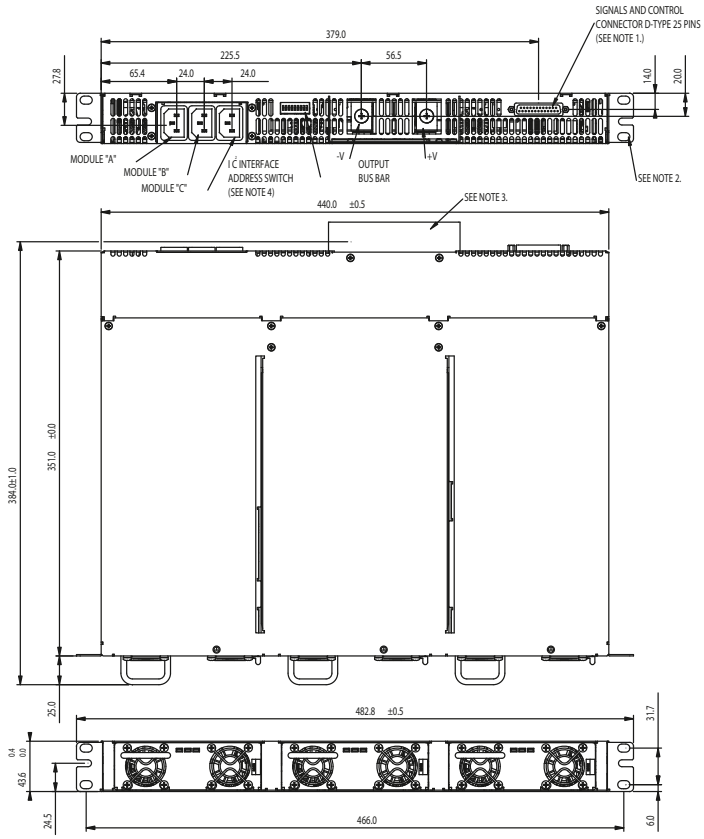


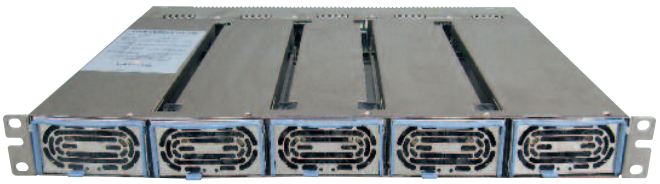
Outline Drawing FPS Racks

FPST1U Rear View



FPSS1U





- 25.2W/in³ power density
- Internal ORing MOSFET & Current Share
- Climate Savers Computing efficiency standards
- Up to 8000W in 1U rack
- Status monitoring signals
- PMBus option

HFE1600 Series

1600W 1U Hot Swap Front End Power Supplies

Key Market Segments & Applications

Power for Distributed Power Architecture
Industrial Automation

HFE1600 Features and Benefits

Features	Benefits
• 1U high	• Utilizes less system space
• Internal ORing MOSFET & Current Share	• Suitable for N+1 redundancy
• Status monitoring signals	• Easier system monitoring including PMBus

Specifications

ITEMS / MODELS			
Input Voltage Range	(2)	VAC	85 - 265VAC, 47 - 63Hz. See model selector for power derating
Input Current (Max) 100/230VAC		A	14.2 / 8.1A
Inrush Current		A	<35A
Power Factor Correction		-	Meets EN61000-3-2, PF > 0.98 at full load
Temperature Coefficient		%/°C	<0.02%/°C
Overcurrent Protection		%	105 - 120%. Programmable by external voltage (0-5V)
Overvoltage Protection	(1)	%	115% (Tracking). Cycle AC to reset or utilize Remote On/Off
Overtemperature Protection	(1)	-	Shutdown with automatic restart. Warning signal provided
Hold up time		ms	>10ms, 100/230VAC Input, 80% loading
Leakage Current		mA	< 0.75 / 1.5mA 100/230VAC, 60Hz
Remote Sense Compensation		-	HFE1600-12: 0.5V/wire, HFE1600-24, -48: 1V/wire
Indicators		-	AC OK: Green LED, DC OK / Fail: Green / Red LED
Remote On/Off		-	Unit ON: 0 - 0.6V or short, OFF: 2 - 15V or open circuit
Parallel Operation		-	Yes, single wire current share, 90% accuracy, up to 10 units
AC Fail Signal		-	Open Collector, ON when AC is within 85 - 270VAC
DC Good Signal		-	Open Collector, ON when output is above 85 to 95% of setpoint (tracking)
Remote Adjust	(1)	-	By either external 0 - 5V signal or 1k potentiometer
I²C Interface	(1)	-	Isolated from output, Add suffix /S, PMBus compatible
Auxiliary Output		-	11.2 - 12.5V, 0.5A, 240mV ripple and noise
Operating Temp. (-TB Rack)		°C	-10°C to +70°C, derate 2%/°C from 50°C to 60°C, 2.5%/°C from 60°C to 70°C
Operating Temp. (-IEC320 Rack)		°C	-10°C to +60°C, derate 2%/°C from 50°C to 60°C
Storage Temperature		°C	-30°C to +85°C
Humidity (Non condensing)		%RH	Operating: 10 - 90%RH, Storage: 10 - 95%RH
Cooling		-	Two variable speed internal fans, airflow exits across input/output connector
Withstand Voltage		-	I/P to O/P 3kVAC, I/P to Ground 2kVAC, O/P to Ground: HFE1600-12, -24V 500VAC, HFE1600-48 1.5kVAC
Isolation Resistance		Ω	>100MΩ at 25°C & 70%RH, Output to Ground 500VDC
Vibration (Basic transportation)		-	Meets IEC61068-2-64
Shock (Basic transportation)		-	Meets IEC61068-2-27
Safety Agency Certifications		-	UL60950-1, EN60950-1, CE Mark
Conducted and Radiated EMI		-	EN55022 & FCC part 15; Conducted class B, Radiated class A
Immunity		-	IEC61000-4-2 (lv 2,3), -3 (lv 2), -4 (lv2), -5 (lv3,4), -6 (lv2), -8 (lv 4), -11
Size (W x H x D)		mm	Power Supply: 85 x 41 x 300, Rack: 445 x 44 x 365
Weight		g	Power Supply: 1550g, Rack: 4800g
Warranty		yrs	3

(1) See installation manual for detailed specifications & test methods **(2)** Derate output power linearly 1%/V from 100VAC to 85VAC input

Model Selector

Model	Output Voltage	Adjust Range (1)	Max Current (Vin>170VAC)(2)	Max Power (Vin>170VAC)(2)	Max Current (100<Vin<170VAC)(2)	Max Power (100<Vin<170VAC)(2)
HFE1600-12	12V	9.6 - 13.2V	133A	1596W	100A	1200W
HFE1600-12/S	12V	9.6 - 13.2V	133A	1596W	100A	1200W
HFE1600-24	24V	19.2 - 29V	67A	1608W	50A	1200W
HFE1600-24/S	24V	19.2 - 29V	67A	1608W	50A	1200W
HFE1600-48	48V	38.4 - 58V	33A	1584W	25A	1200W
HFE1600-48/S	48V	38.4 - 58V	33A	1584W	25A	1200W

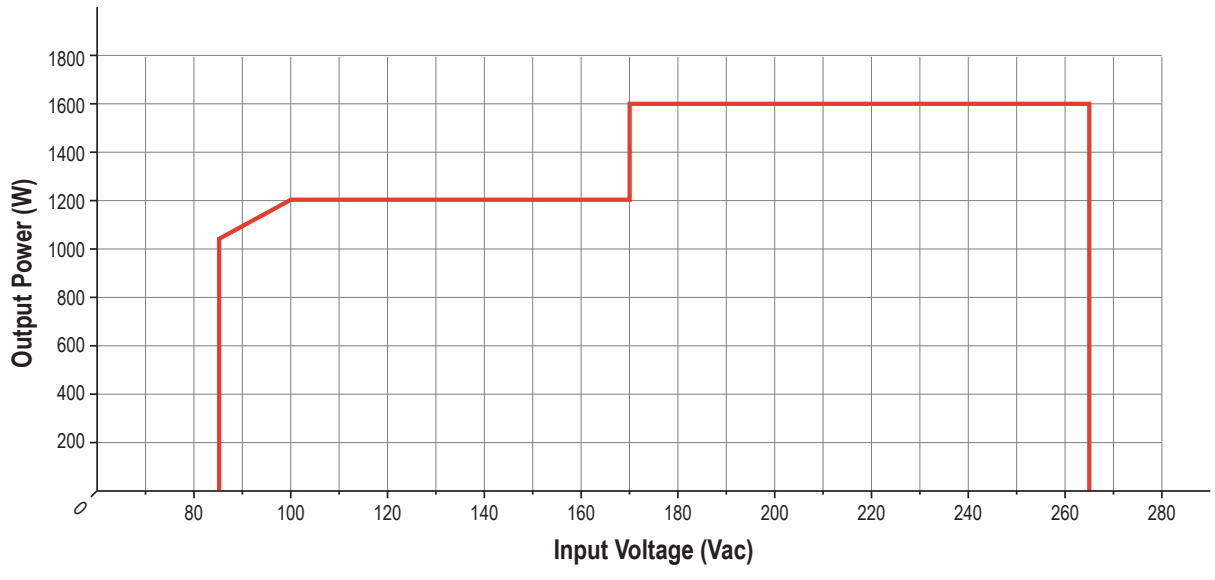
Model	Load Reg	Line Reg	Ripple & Noise	Efficiency (%)(3)	I²C
HFE1600-12	60mV	30mV	240mV	87 / 90%	-
HFE1600-12/S	60mV	30mV	240mV	87 / 90%	Yes
HFE1600-24	120mV	60mV	240mV	88 / 90%	-
HFE1600-24/S	120mV	60mV	240mV	88 / 90%	Yes
HFE1600-48	240mV	120mV	480mV	89 / 92%	-
HFE1600-48/S	240mV	120mV	480mV	89 / 92%	Yes

(3) At 75% load, 100 / 230VAC input

• HFE2500 high power density 1U hotswap front end 29W/cu in • 12, 24 or 48 V models • Up to 4 units in a 1U 19" rack •
• 10 kW output power per rack (2 racks can be paralleled for 20kW) •
Available early 2011

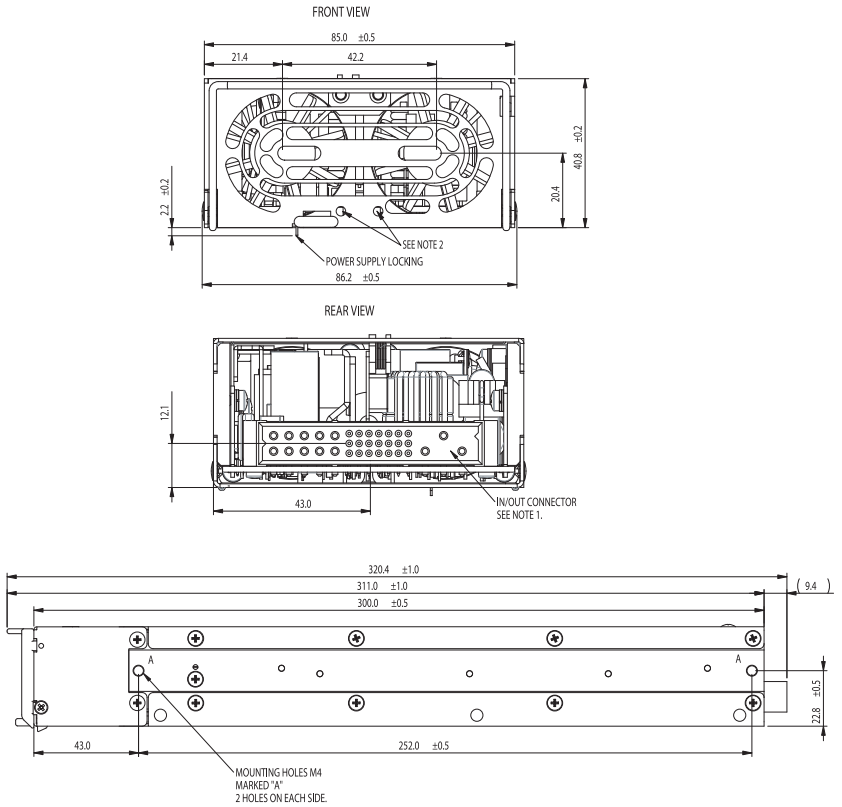
Rack Model Selector

Model	Description	Maximum Rack Current
HFE1600-S1U	Five slot 19" rack, IEC320 input connectors (5)	200A each side (400A total)
HFE1600-S1U-TB	Five slot 19" rack, Terminal Block input connectors (5)	200A each side (400A total)
HFE1600/BP	One slot blanking panel, three provided with each rack	

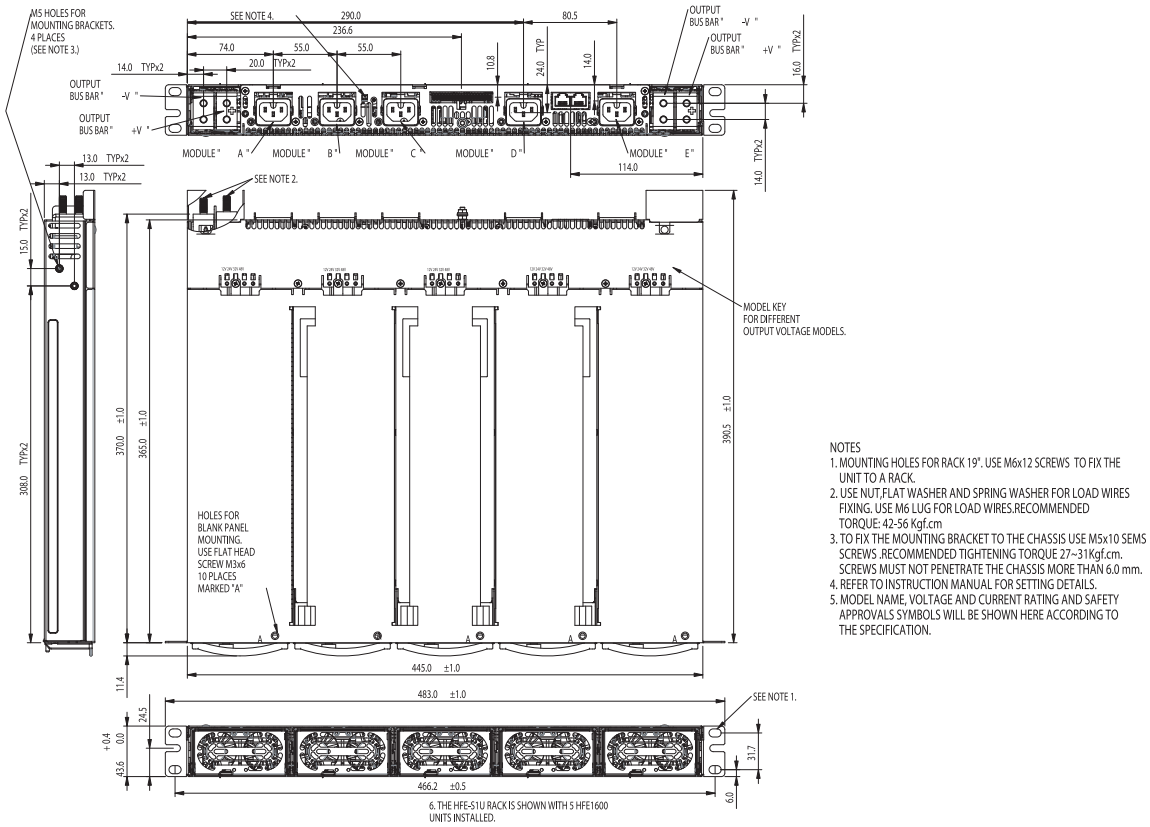


HFE 1600 Power Derating v's Input Voltage

Outline Drawing HFE1600 Series



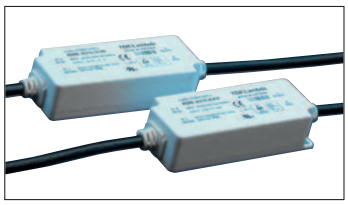
Outline Drawing HFE1600S1U Series



NOTES
1. MOUNTING HOLES FOR RACK 19". USE M6x12 SCREWS TO FIX THE UNIT TO A RACK.
2. USE NUT,FLAT WASHER AND SPRING WASHER FOR LOAD WIRES FIXING. USE M6 LUG FOR LOAD WIRES.RECOMMENDED TORQUE: 42-56 Kgf.cm
3. TO FIX THE MOUNTING BRACKET TO THE CHASSIS USE M5x10 SEMS SCREWS .RECOMMENDED TIGHTENING TORQUE 27~31Kgf.cm. SCREWS MUST NOT PENETRATE THE CHASSIS MORE THAN 6.0 mm.
4. REFER TO INSTRUCTION MANUAL FOR SETTING DETAILS.
5. MODEL NAME, VOLTAGE AND CURRENT RATING AND SAFETY APPROVALS SYMBOLS WILL BE SHOWN HERE ACCORDING TO THE SPECIFICATION.

LED Lighting Constant Voltage and Constant Current AC-DC Power Supplies

The ALV constant voltage and ALC constant current LED lighting power supplies are IP66 splash proof rated and are ideal for indoor and outdoor installations. They are designed for long service life to match the expected lifetime of the LED lighting fixture itself. Available now in 12W output power with 60W, 80W and 100W models due for launch in Spring 2011.



ALC/ALV Series 12W Single Output

- Small Size
- Constant Current or Constant Voltage Versions
- Splash proof
- Conservative component ratings for long life

Key Market Segments & Applications

LED Lighting
Damp Environments

ALC/ALV Series

12W IP66
Power Supplies

AL12 Features and Benefits

Features	Benefits
• IP66 Rated	• Can be used in wet applications
• Vacuum Encapsulated	• Robust
• Wide range AC Input	• Supports global use

Specifications

ITEMS / MODEL			ALC12	ALV12
AC Input		VAC/Hz	90 - 264VAC, 47 - 63Hz	
Inrush Current (100/200VAC)		A	25 / 50A, 25°C ambient, cold start	
Input Current (110/200VAC)		A	0.28 / 0.18A	
Temperature Coefficient		-	<0.02%/°C (0 - 50°C)	
Overcurrent Protection		-	Automatic Recovery	> 105% of rated power
Overvoltage Protection		%	> 110%	
Turn on time		ms	< 200ms	
Leakage Current (265VAC 60Hz)		mA	0.25mA	
Efficiency		%	82% typical at full load	
Operating Temperature		-	-10 to +60°C (Guaranteed start up at -20°C)	
Storage Temperature		-	-30°C to +85°C	
Operating Humidity	(1)	-	15 - 90% RH	
Storage Humidity	(1)	-	15 - 90% RH	
Cooling		-	Convection	
Withstand Voltage		-	Input to Output 3kVAC (Class II, no ground connection needed)	
Isolation Resistance		Ω	>100MΩ at 25°C & 70%RH, Input to Output at 500VDC	
Vibration (non operating)		-	10 - 55Hz: 19.6m/s^2 constant sweep 1 min X, Y, Z for 30 mins	
Shock		-	< 196.1 m/s^2 (20G)	
Immunity		-	IEC61000-4-2, -3, -4, -5, -6, -8, -11	
Safety Agency Approvals		-	UL8750 (Class 2), EN61347-1, EN61347-2-13, CSA C22.2 No. 60950-1, CE Mark	
Conducted & Radiated EMI		-	EN55015, EN55022, FCC Class B	
IP Class		-	IP66	
Weight (Typ)		g	84	
Size (LxWxH)		mm	90 x 34.5 x 21	
Warranty		yrs	3	

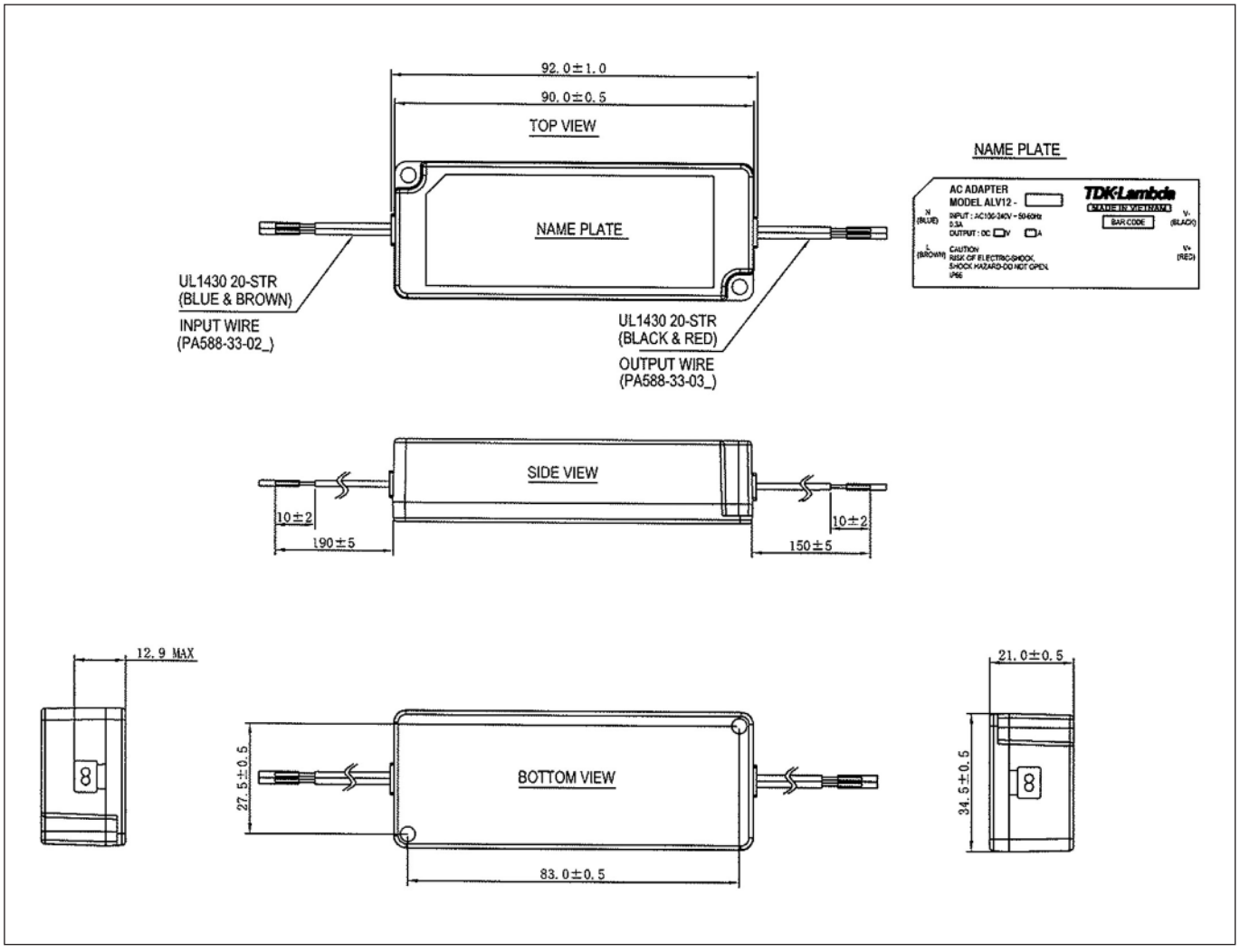
(1) Non condensing

60, 80 & 100W models coming soon - available early 2011

Model Selector

Model	CV/CC	Output Voltage (V)	Output Accuracy	Min. Output Current (A)	Output Current (A)	Maximum Average Power	Ripple & Noise
ALC12-36-R35	CC	3 - 36V	0.33 - 0.37A	-	0.35A	12.6W	-
ALC12-18-R70	CC	3 - 18V	0.66 - 0.735A	-	0.7A	12.6W	-
ALV12-12-1R0	CV	12	11.4 - 12.6V	0.1A	1A	12W	100mV
ALV12-15-R80	CV	15	14.25 - 15.75V	0.08A	0.8A	12W	100mV
ALV12-24-R50	CV	24	22.8 - 25.2V	0.05A	0.5A	12W	150mV

Outline Drawing AL12 Series

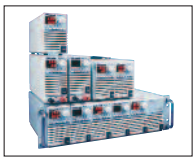


Programmable Rack Mount and Laboratory Power Supplies

Genesys™ and ZUP constant voltage / constant current programmable power supplies are available in versions from 200W to 15kW. Units can be run in master / slave parallel to facilitate higher powered systems. Comprehensive analogue and digital control features come as standard along with free downloadable software and drivers from our website.

Genesys™ has many additional options available such as LAN LXI and GPIB interfaces, power sink and special “fast speed” models optimized for laser diodes and automotive test programmes.

Applications cover many industries including ATE test and component burn-in systems, semiconductor and flat panel display manufacturing processes, water purification, ship-borne ROV power, MRI, electroplating, particle accelerators and renewable energy system inverter testing.



Programmable Power Supplies

Many applications require more than a fixed voltage. Today's test systems and industrial processes require stable and accurate control of output voltage and current during operation with the facility to monitor these parameters.

Genesys™ and ZUP are designed to fulfil these requirements by offering RS-232 / RS-485 and analogue control and monitoring interfaces built in as standard. Further options for Genesys™ include LAN (LXI compliant) and GPIB (SCPI compliant).

Various software drivers, such as IVI-COM and Labview, and tools are downloadable from our website to enable easy integration with industry standard software control packages.

Applications

Genesys™ and **ZUP** can provide the best solution for programmable power in many applications by offering comprehensive control and monitoring features that are intuitive and easy to use and not overly complex.

Medical
- X-Ray
- Oncology
- MRI
- Magnets
- Gradient amplifiers

Aerospace & Defence
- RF communication
- Satellite test systems
- Materials research
- ATE systems

Diode Laser
- Medica
- Marking
- Cutting
- Welding

Automotive
- Component burn-in
- Fuel cell
- Lamp testing
- Component development
- Battery simulation

Semiconductor
- Burn-in
- Deposition
- Ion implantation
- Component lead electroplating
- MBE systems
- MOCVD for LED manufacture
- Solar cell manufacture

Test & Measurement
- Large ATE systems
- Component test
- Analytical instrument
- Module and component burn-in
- Solar inverter testing

Other Industrial
- Water purification
- Plating and etching
- Capacitor forming
- Shipborne DC power
- High power halogen heaters
- Flat panel display manufacture

Genesys™

The Genesys™ family of programmable power supplies sets a new standard for flexible, reliable, AC/DC power systems in OEM, Industrial and Laboratory applications.

Features

- **High Power Density**
  – 750W / 1500W / 2400 W in 1 U – 3.3 / 5 kW in 2 U
  – 750 W in 9.5" 1 U – 10 / 15 kW in 3 U
- **Wide Range of popular worldwide AC inputs**
  – 1-phase wide range (85 – 265 V AC)
  – 1-phase (230 V AC)
  – 3-phase (208 V AC, 400 V AC, 480 V AC) model dependent
- **Active/passive Power Factor Correction**
  (Single-Phase & Three-Phase AC Input)
- **Output Voltage up to 600 V, Current up to 1000 A**
- **Built-in RS-232 / RS-485 Interface Standard**
- **Global Commands for Serial RS-232 / RS-485 Interface**
- **Auto-Re-Start / Safe-Start: user-selectable**
- **Last-Setting Memory; Front panel lockout**
- **High Resolution 16 bit ADCs & DACs**
- **Low Ripple & Noise**
- **Front Panel Lock selectable from Front Panel or Software**
- **Reliable Encoders for Voltage and Current Adjustment**
- **Constant Voltage / Constant Current auto-crossover**
- **NEW Integrated Power Sink Option for 1U 750W & 1500W Models** – up to 60V
- **Parallel Operation with Active Current Sharing; up to four identical units**
- **Advanced Parallel Master/Slave**
  Total Current is programmed and measured via the master
- **Independent Remote ON/OFF and Remote Enable /Disable**
- **External Analog Programming and Monitoring**
  (user-selectable 0 – 5 V & 0 –10 V)
- **Programmable foldback delay for current limit**
- **Auxiliary output 5 V/0.2 A isolated, 15 V/0.2 A non isolated (GEN 2.4 kW only)**
- **Reliable Modular and SMT Design**
- **19" Rack Mount capability for ATE and OEM applications**
- **Optional Interfaces**
  – Isolated Analog Programming and Monitoring Interface
  (0 – 5 V / 0 –10 V & 4 – 20 mA)
  – IEEE 488.2 SCPI (GPIB) Multi-Drop
  – LXI compliant LAN interface
- **LabView™ Genesys™ Control (Runtime Module) and Drivers**
- **Five Years Warranty**

Worldwide Safety Agency Approvals; CE Mark for LVD and EMC Regulation.

c UL us LISTED TÜV Rheinland GS geprüfte Sicherheit CE

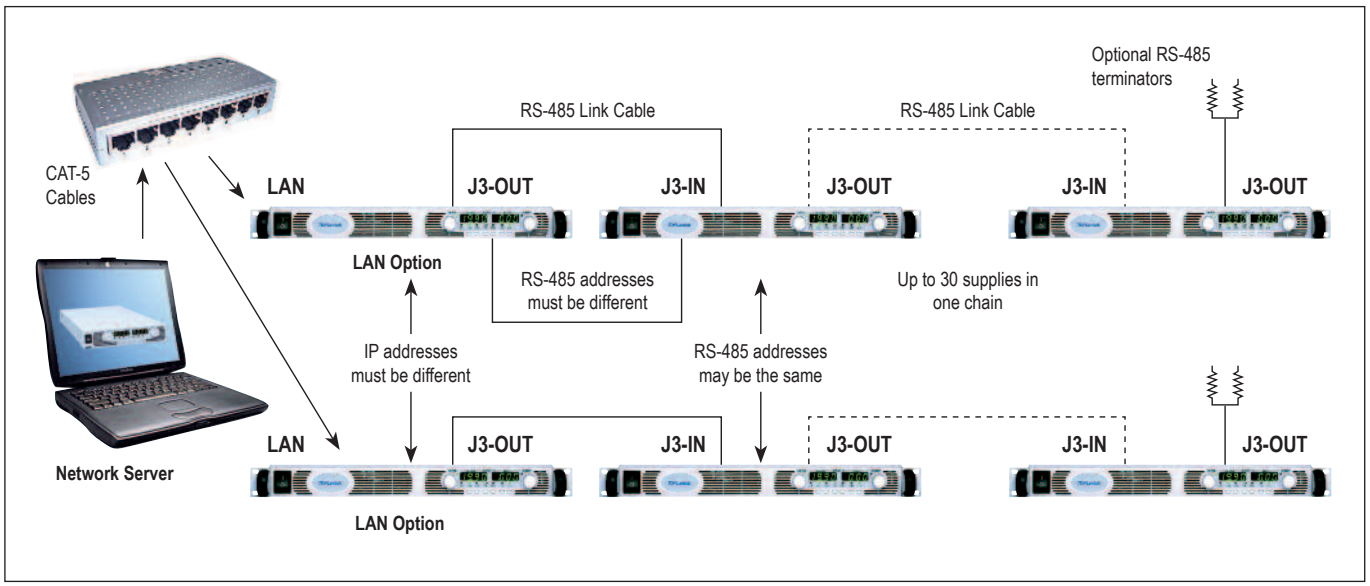
Genesys™ 750 / 1500W in 1U with Power Sink

The market leading Genesys™ Programmable Power Supplies offer a wide variety of useful inte-grated functions and features, making them into an extremely effective and easy to use tool for many applications. Now Genesys™ 1 U 750 W and 1500 W models are available with a Power Sink Option (PSINK) that can absorb energy from the load.

Genesys™ LAN 2.0 Interface

The optional LAN Interface for Genesys™ power supplies has been upgraded to provide many new features including functionality for users outside of Test and Measurement. We now offer TCP and UDP networking protocols for alternative operating systems, programming languages and controllers. The option maintains LXI-C Certification.

- **Adds TCP and UDP Sockets**
  LAN 2.0 expands connectivity for many customers beyond standard test software, operating systems and controllers.
- **Change IP Address using Front Panel Current Encoder**
  The current encoder will change the IP address. Locking in a new address requires a confirmation button press, to prevent accidental changes. Address conflicts (duplicate IP) are prevented.
- **The LAN remains LXI-C Certified**
- **Adds Multiple Controllers**
  The new LAN allows two or more controller devices to "talk" to the power supply at the same time. The controllers may use any mix of TCP, UDP or VISA protocols.
- **Duplicate IP Recovery**
  If the user accidentally sets a duplicate IP address, which is already used by another device, LAN 2.0 will reconnect to the last working address instead of disconnecting from the network. A Front Panel and/or web page alert is posted to the user.
- **Higher Capacity Input Buffer**
  The number of commands that may be sent at once has been increased from four to twenty commands.
- **Adds Network Security Setting**
  A new security button, on the web page, can be set for "allow only one controller using a secure protocol" or "allow everybody at the same time" to talk to the power supply. (Note: UDP is not a secure protocol, TCP and VISA are secure).
- **Improves Message Terminators**
  The traditional terminator for messages is the Line-Feed character. The new LAN 2.0 sockets will accept and return the line-feed.
- **Improved LAN User Manual**
  New manual includes specification on command speed. And has an easier to use layout.



GENH 750 W in 1U Half Rack

Model	Output Voltage V DC	Output Current (A)	Output Power (W)
GENH6-100	0~6 V	0~100 A	600 W
GENH8-90	0~8 V	0~90 A	720 W
GENH12.5-60	0~12.5 V	0~60 A	750 W
GENH20-38	0~20 V	0~38 A	760 W
GENH30-25	0~30 V	0~25 A	750 W
GENH40-19	0~40 V	0~19 A	760 W
GENH60-12.5	0~60 V	0~12.5 A	750 W
GENH80-9.5	0~80 V	0~9.5 A	760 W
GENH100-7.5	0~100 V	0~7.5 A	750 W
GENH150-5	0~150 V	0~5 A	750 W
GENH300-2.5	0~300 V	0~2.5 A	750 W
GENH600-1.3	0~600 V	0~1.3 A	780 W

- **Wide Range Input (85 - 265 VAC Continuous)**
- **Active Power Factor Correction (0.99 typical)**
- **Output Voltage up to 600V, Current up to 100A**

GEN 750/1500/2400 W in 1U 19” Rack

Model	Output Voltage V DC	Output Current (A)	Output Power (W)	
GEN6-100 GEN6-200	0 ~ 6 V	0 ~ 100 A 0 ~ 200 A	600 W 1200 W	
GEN8-90 GEN8-180 GEN8-300	0 ~ 8 V	0 ~ 90 A 0 ~ 180 A 0 ~ 300 A	720 W 1440 W 2400 W	
GEN10-240	0 ~ 10 V	0 ~ 240 A	2400 W	
GEN12.5-60 GEN12.5-120	0 ~ 12.5 V	0 ~ 60 A 0 ~ 120 A	750 W 1500 W	
GEN16-150	0 ~ 16 V	0 ~ 150 A	2400 W	
GEN20-38 GEN20-76 GEN20-120	0 ~ 20 V	0 ~ 38 A 0 ~ 76 A 0 ~ 120 A	760 W 1520 W 2400 W	
GEN30-25 GEN30-50 GEN30-80	0 ~ 30 V	0 ~ 25 A 0 ~ 50 A 0 ~ 80 A	750 W 1500 W 2400 W	
GEN40-19 GEN40-38 GEN40-60	0 ~ 40 V	0 ~ 19 A 0 ~ 38 A 0 ~ 60 A	760 W 1520 W 2400 W	
GEN50-30	0 ~ 50 V	0 ~ 30 A	1500 W	
GEN60-12.5 GEN60-25 GEN60-40	0 ~ 60 V	0 ~ 12.5 A 0 ~ 25 A 0 ~ 40 A	750 W 1500 W 2400 W	
GEN80-9.5 GEN80-19 GEN80-30	0 ~ 80 V	0 ~ 9.5 A 0 ~ 19 A 0 ~ 30 A	760 W 1520 W 2400 W	
GEN100-7.5 GEN100-15 GEN100-24	0 ~ 100 V	0 ~ 7.5 A 0 ~ 15 A 0 ~ 24 A	750 W 1500 W 2400 W	
GEN150-5 GEN150-10 GEN150-16	0 ~ 150 V	0 ~ 5 A 0 ~ 10 A 0 ~ 16 A	750 W 1500 W 2400 W	
GEN300-2.5 GEN300-5 GEN300-8	0 ~ 300 V	0 ~ 2.5 A 0 ~ 5 A 0 ~ 8 A	750 W 1500 W 2400 W	
GEN600-1.3 GEN600-2.6 GEN600-4	0 ~ 600 V	0 ~ 1.3 A 0 ~ 2.6 A 0 ~ 4 A	780 W 1560 W 2400 W	

- **Highest Power Density available: 2400W in 1U**
- **Wide Range Input (85 - 265 VAC Continuous, single phase, 47/63Hz) for models up to 1500W.**
- **Active Power Factor Correction (0.99 typical)**
- **Output Voltage up to 600V, Current up to 300A**
- **Power Sink Option for 750W & 1500W.**

Innovating Reliable Power TDK·Lambda

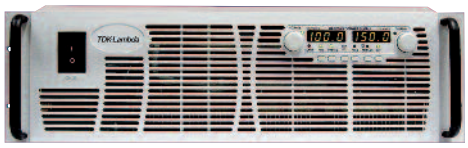
GEN 3.3/5kW in 2U 19" Rack

Model	Output Voltage V DC	Output Current (A)	Output Power (W)	
GEN-8-400 GEN-8-600	0 ~ 8 V	0 ~ 400 A 0 ~ 600 A	3200 W 4800 W	
GEN-10-330 GEN-10-500	0 ~ 10 V	0 ~ 330 A 0 ~ 500 A	3300 W 5000 W	
GEN-15-220	0 ~ 15 V	0 ~ 220 A	3300 W	
GEN-16-310	0 ~ 16 V	0 ~ 310 A	4960 W	
GEN-20-165 GEN-20-250	0 ~ 20 V	0 ~ 165 A 0 ~ 250 A	3300 W 5000 W	
GEN-30-110 GEN-30-170	0 ~ 30 V	0 ~ 110 A 0 ~ 170 A	3300 W 5100 W	
GEN-40-85 GEN-40-125	0 ~ 40 V	0 ~ 85 A 0 ~ 125 A	3400 W 5000 W	
GEN-60-55 GEN-60-85	0 ~ 60 V	0 ~ 55 A 0 ~ 85 A	3300 W 5100 W	
GEN-80-42 GEN-80-65	0 ~ 80 V	0 ~ 42 A 0 ~ 65 A	3360 W 5200 W	
GEN-100-33 GEN-100-50	0 ~ 100 V	0 ~ 33 A 0 ~ 50 A	3300 W 5000 W	
GEN-150-22 GEN-150-34	0 ~ 150 V	0 ~ 22 A 0 ~ 34 A	3300 W 5100 W	
GEN-200-16.5 GEN-200-25	0 ~ 200 V	0 ~ 16.5 A 0 ~ 25 A	3300 W 5000 W	
GEN-300-11 GEN-300-17	0 ~ 300 V	0 ~ 11 A 0 ~ 17 A	3300 W 5100 W	
GEN-400-13 GEN-500-10	0 ~ 400 V 0 ~ 500 V	0 ~ 13 A 0 ~ 10 A	5200 W 5000 W	
GEN-600-5.5 GEN-600-8.5	0 ~ 600 V	0 ~ 5.5 A 0 ~ 8.5 A	3300 W 5100 W	

GEN 10/15kW in 3U 19" Rack

Model	Output Voltage V DC	Output Current (A)	Output Power (W)
GEN-7.5-1000	0 ~ 7.5 V	0 ~ 1000 A	7.5 kW
GEN-10-1000	0 ~ 10 V	0 ~ 1000 A	10 kW
GEN-12.5-800	0 ~ 12,5 V	0 ~ 800 A	10 kW
GEN-20-500	0 ~ 20 V	0 ~ 500 A	10 kW
GEN-25-400	0 ~ 25 V	0 ~ 400 A	10 kW
GEN-30-333	0 ~ 30 V	0 ~ 333 A	10 kW
GEN-40-250	0 ~ 40 V	0 ~ 250 A	10 kW
GEN-50-200	0 ~ 50 V	0 ~ 200 A	10 kW
GEN-60-167 GEN-60-250	0 ~ 60 V	0 ~ 167 A 0 ~ 250 A	10 kW 15 kW
GEN-80-125 GEN-80-187.5	0 ~ 80 V	0 ~ 125 A 0 ~ 187.5 A	10 kW 15 kW
GEN-100-100 GEN-100-150	0 ~ 100 V	0 ~ 100 A 0 ~ 150 A	10 kW 15 kW
GEN-125-80 GEN-125-120	0 ~ 125 V	0 ~ 80 A 0 ~ 120 A	10 kW 15 kW
GEN-150-66 GEN-150-100	0 ~ 150 V	0 ~ 66 A 0 ~ 100 A	10 kW 15 kW
GEN-200-50 GEN-200-75	0 ~ 200 V	0 ~ 50 A 0 ~ 75 A	10 kW 15 kW
GEN-250-40 GEN-250-60	0 ~ 250 V	0 ~ 40 A 0 ~ 60 A	10 kW 15 kW
GEN-300-33 GEN-300-50	0 ~ 300 V	0 ~ 33 A 0 ~ 50 A	10 kW 15 kW
GEN-400-25 GEN-400-37.5	0 ~ 400 V	0 ~ 25 A 0 ~ 37.5 A	10 kW 15 kW
GEN-500-20 GEN-500-30	0 ~ 500 V	0 ~ 20 A 0 ~ 30 A	10 kW 15 kW
GEN-600-17 GEN-600-25	0 ~ 600 V	0 ~ 17 A 0 ~ 25 A	10 kW 15 kW

- **Highest Power Density 5kW in 2U**
- **Wide Range of popular worldwide AC inputs, Single-Phase (230VAC) & Three-Phase (208VAC, 400VAC) (5kW only 3 phase)**
- **Active Power Factor Correction (Single-Phase &Three-Phase AC Input)**
- **Output Voltage up to 600V, Current up to 600A**



- **Highest Power Density 10/15kW in 3U**
- **Wide Range of popular worldwide Three Phase AC Inputs, (208VAC, 400VAC, 480VAC)**
- **Power Factor 0.88 (Passive Correction on all Inputs)**
- **Output Voltage up to 600V, Current up to 1,000A**

Innovating Reliable Power TDK·Lambda

- Constant Voltage / Constant Current
- Last Setting Memory
- Digital Meters
- Built-in RS232 & RS485 Interface w/ GPIB optional
- Bench or Rack Mount
- Embedded Microprocessor Controller
- Voltage up to 120V, Current up to 132A

ZUP Series

Zero Up Programmable Power Supplies

Specifications

ITEMS \ MODELS	Cond.	ZUP6	ZUP10	ZUP20	ZUP36	ZUP60	ZUP80	ZUP120
Load Regulation	CV	2mV + 0.005% over 0 - 100% load change						
Line Regulation	CV	1mV + 0.005% over 85 - 132 or 170 - 265VAC constant load						
Recovery Time (1)	CV	1ms	0.5ms	0.2ms				
Temperature Coefficient	CV	30ppm/°C following 30 minute warm up						
Temperature Drift (2)	CV	0.01% + 2mV change in output						
Up programming response time	CV	50 - 60ms					80ms	120ms
Down prog. resp. time (CV)	Full	50ms (70ms ZUP60-14)						
Down prog. resp. time (CV)	Zero	250ms	350ms	400ms	500ms	750ms	800ms	1000ms
Load Regulation	CC	0.01% + 5mA on 200W and 400W models, 0.07% + 10mA on 800W models						
Line Regulation	CC	0.01% + 2mA on 200W and 400W models, 0.01% + 5mA on 800W models						
Temperature Coefficient	CC	100ppm/°C from rated current after 30 minute warm up time						
Temperature Drift (2)	CC	0.02% + 5mA, 200W and 400W models, 0.05% + 10mA, 800W models						
Prog Voltage resolution	-	Better than 0.028% of rated voltage						
Prog Voltage accuracy	-	.02%+5mV.	.02%+8mV.	.02%+12mV	.02%+20mV	.02%+35mV	.02%+50mV	.02%+80mV
Prog Current resolution	-	Better than 0.03% of rated current						
Prog Current accuracy	-	0.4% + 40mA						
Overvoltage Shutdown	V	0 - 7.5	0 - 13	0 - 24	0 - 40	0 - 66	0 - 88	0 - 132
Thermal Protection	-	Over temperature protected						
Display - Voltage	-	3 digits (6, 20, 36, 60, 80V models), 3.5 digits (10, 120V models). Accuracy 0.2% ± 2 digits						
Display - Current	-	3 digits, (3.5 digits 132A model). Accuracy 0.5% ± 3 digits						
Display - Status	-	CV / CC, Alarm, Foldback, Local/Remote, On/Off						
Remote On/Off	-	TTL signal or dry contact relay						
Output Good	-	Open Collector						
Voltage & Current Programming	-	By either Voltage (0-4V) or Resistance (0-4k)						
Remote Sense	-	Up to 0.5V compensation per output cable						
Communication Interface	-	RS232 & RS485 standard, IEEE488 optional						
Series & Parallel Operation	-	Series: Up to two units; Parallel: Up to five units in master-slave configuration						
AC Input Voltage range	-	85-265VAC (47-63Hz)						
Inrush Current (100/200VAC) (3)	-	15/30A, 200W models, 15A, 400W models, 30A, 800W models						
Hold Up Time (Typ) at 100VAC	ms	20						
Power Factor Correction	-	Complies with EN61000-3 Class A (0.99 typ)						
Temperature Range	-	Operating: 0°C - 50°C; Storage: -20°C to +70°C						
Humidity (non condensing)	-	Operating: 30°C - 90% RH, Storage 10°C - 95%RH						
Cooling	-	Internal fan						
Withstand Voltage	-	Input to Ground 2kVAC, Input to Output 3kVAC, Output to Ground 500VAC for 1 min.						
Isolation Resistance	Ω	>100MΩ at 25°C & 70%RH						
Vibration & Shock (non-op.)	-	Vibration:10-55Hz(1 min.) 2G constant X, Y, Z, when correctly mounted; Shock: <20G						
Safety Agency Approvals	-	UL3111-1, EN61010-1, CE Mark						
Conducted & Radiated EMI	-	EN55022-B conducted, A radiated, FCC Class B conducted, A radiated, VCCI-B conducted, -A radiated						
Warranty	yrs	3						

(1) Recovery to within +/-50mV after load change of 50-100% (2) Over 8 hour period following 30 minute warm up time (3) 25°C ambient (cold start)

Model Selector

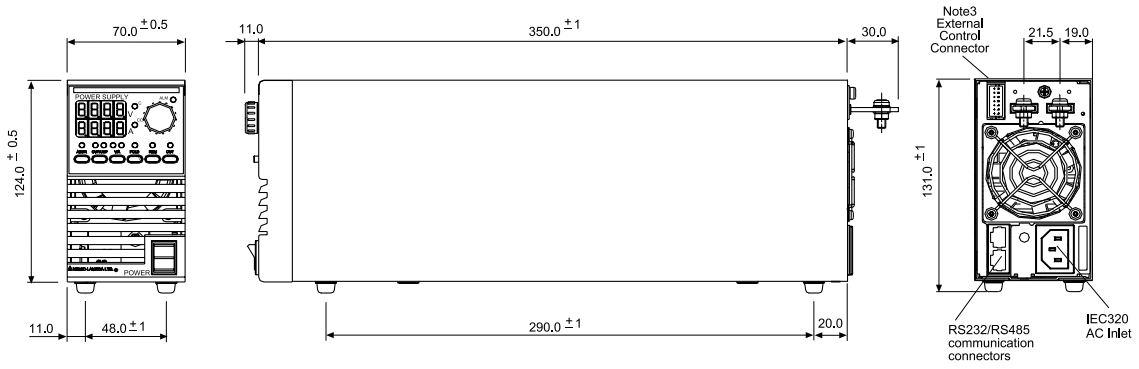
Model	Voltage Adjust Range	Current Adjust Range	Max Power	Ripple 5Hz-1MHz mV	Noise 20MHz BW mV	Ripple 5Hz-1MHz mA	Efficiency % (100/200VAC)	Weight kg
ZUP6-33	0-6V	0-33	198	5	50	50	69 / 72	2.9
ZUP6-66	0-6V	0-66	396	5	50	100	74 / 77	3.2
ZUP6-132	0-6V	0-132	792	8	100	200	74 / 77	5.8
ZUP10-20	0-10	0-20	200	5	50	25	73 / 77	2.9
ZUP10-40	0-10	0-40	400	5	50	50	79 / 82	3.2
ZUP10-80	0-10	0-80	800	8	90	100	77 / 81	5.8
ZUP20-10	0-20	0-10	200	5	50	15	74 / 78	2.9
ZUP20-20	0-20	0-20	400	5	50	30	79 / 83	3.2
ZUP20-40	0-20	0-40	800	5	80	60	79 / 82	5.8
ZUP36-6	0-36	0-6	216	5	50	7.5	76 / 80	2.9
ZUP36-12	0-36	0-12	432	5	50	15	80 / 84	3.2
ZUP36-24	0-36	0-24	864	5	70	30	80 / 84	5.8
ZUP60-3.5	0-60	0-3.5	210	5	50	5	75 / 79	2.9
ZUP60-7	0-60	0-7	420	5	50	10	80 / 84	3.2
ZUP60-14	0-60	0-14	840	5	60	20	80 / 84	5.8
ZUP80-2.5	0-80	0-2.5	200	20	70	5	78 / 82	2.9
ZUP80-5	0-80	0-5	400	20	70	10	83 / 87	3.2
ZUP120-1.8	0-120	0-1.8	216	20	80	5	78 / 82	2.9
ZUP120-3.6	0-120	0-3.6	432	20	80	10	82 / 86	3.2

Options and Accessories

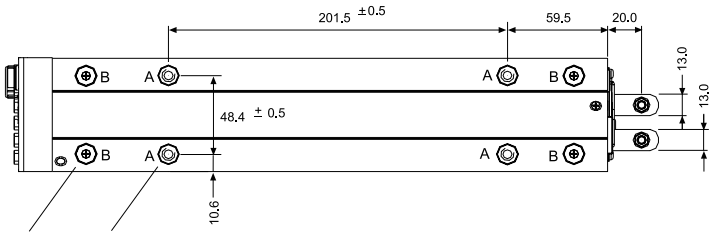
Option	Model Suffix	Part Number
Front panel terminals (20A max)[5]	/L[4]	ZUP200/400/L[4]
Front panel terminals (20A max)[6]	/L[4]	ZUP800/L[4]
IEC320 cable Europe plug	/E	ZUP/E
Serial link cable RJ-45	/W	ZUP/W
GPIB Controller		GP485A
Dual Unit Assembly		NL200*
(accepts 200W or 400W models)		
19" 3U rack (accepts up to 6 200/400W models)	NL100*	
Blanking panels for NL100 (19 in. rack)	NL101*	
RS232 Communications Cable DB-9F	ZUP/NC401	
RS232 Communications Cable DB-25F	ZUP/NC403	
RS485 Communications Cable DB-9F	ZUP/NC402	
RS485 Communications Cable DB-25F	ZUP/NC404	
User Manual		NL102

*** (See website for more details)**
[4] Not available with ZUP80 or ZUP120 models.
[5] 200W and 400W models
[6] 800W models

Outline Drawing 200/400W



Notes:
1. Mounting screws must not protrude more than 6mm into the power supply.
2. Use M6 or 1/4" screw for load wires connection.
3. Housing AMP: 87631-9 with pins AMP: 87523-6.



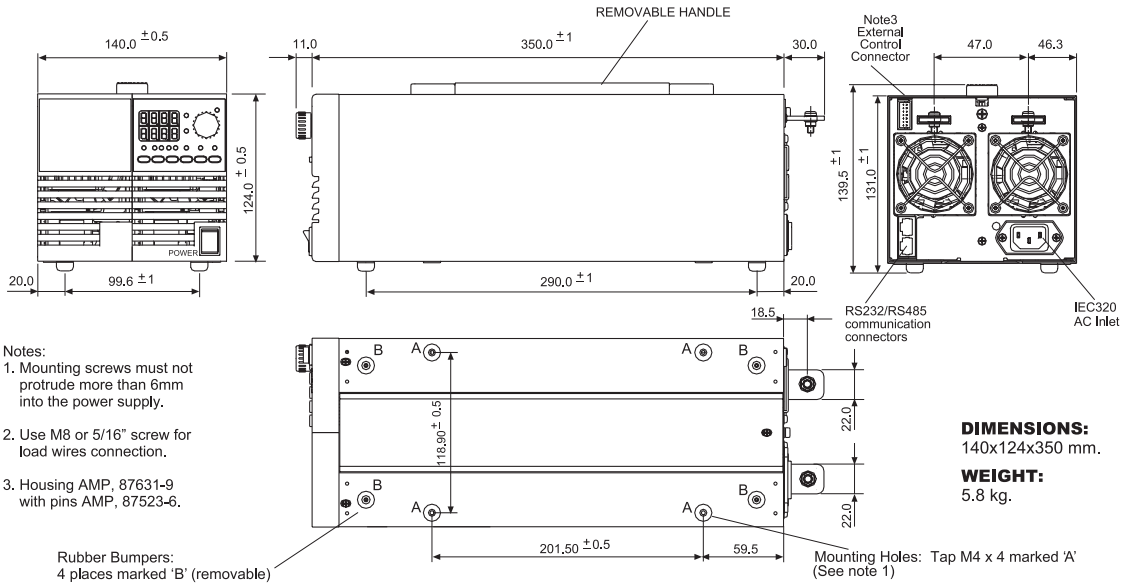
Rubber Bumpers
4 places marked 'B'
(removable)

Mounting Holes
Tap M4 x 4 marked 'A'
(See note 1)

DIMENSIONS: mm
200W /400W units: 70x124x350

WEIGHT: Kg
200W units: 2.9 400W units: 3.2

Outline Drawing 800W



Notes:
1. Mounting screws must not protrude more than 6mm into the power supply.
2. Use M8 or 5/16" screw for load wires connection.
3. Housing AMP, 87631-9 with pins AMP, 87523-6.

Rubber Bumpers:
4 places marked 'B' (removable)

Mounting Holes: Tap M4 x 4 marked 'A'
(See note 1)

DIMENSIONS:
140x124x350 mm.

WEIGHT:
5.8 kg.

Innovating Reliable Power TDK·Lambda

AC-DC and DC-DC Power Modules (Bricks)

A comprehensive range of standard dc-dc "bricks" and baseplate conduction cooled ac-dc modules for integration into equipment with minimal external components.
DC inputs include 24V and 48V, nominal 110V (60 to 160V range) for rail applications (CN-A series) and nominal 280V (200 to 400V) high voltage models.

- Low profile, small size
- 100°C baseplate temperature
- High power density
- High Efficiency
- Suitable for conduction cooling

Key Market Segments & Applications

Bulk DC Power for DC-DC Converters & POL Converters
Custom Fanless Power Supplies
LED Signs
Traffic Signalling
Toll Equipment

PFE300 - 1000 Series

300 to 1008W
AC-DC Power Module

PFE300 - 1000 Features and Benefits

Features	Benefits
• Low profile	• Assists system integration
• High Efficiency	• Easier to cool
• Power Factor Corrected (PFC)	• Supports Global Use
• Operation up to 100°C baseplate	• Operates in harsh environments

Specifications

ITEMS \ MODEL		PFE300S PFE500S	PFE700S	PFE500F	PFE1000F
AC Input	VAC	85 to 265VAC, 47-63Hz (Reduced PFC above 63Hz)			
Input Current (100 / 220VAC)	A	4.0 / 2.0	8.8 / 4.4	6.8 / 3.4	13.6 / 6.6
Model dependant		6.2 / 3.2			
Inrush Current (100 /200VAC) (1)	A	20 / 40 peak			
Power Factor		0.95 minimum			
Output Voltage Setpoint Accuracy	-	±2%	±1V	±2%	±2%
Ripple and Noise (1)	-	1%	4V	1%	1%
Over Current Protection	%	105 - 140% (Automatic Recovery)			105 - 140% Manual reset
Over Voltage Protection	-	125 - 145%	60 - 69.6V	125 - 145%	125 - 145%
Series Operation	-	Yes			
Parallel Operation	-	No	Yes (Droop mode)	Yes (Single wire)	Yes (Single wire)
Power On Signal (ENA)	-	Open collector (10mA sink current). Low (on) when output is present			
Auxilliary Supply	-	None	None	10 - 14V, 20mA	10 - 14V, 20mA
Remote On/Off (Opto isolated)	-	None	None	High = On	High = On
Overtemperature Protection		Yes			
Operating Baseplate Temp.	°C	-40°C to +100°C (2)			
Storage Temperature	°C	-40°C to +100°C			
Humidity (non condensing)		Operating: 20 - 95%RH, Non Operating: 10 - 95%RH			
Cooling		Conduction			
Withstand Voltage (1 min) (4)		Input to Output 3kVAC, Input to Baseplate 2.5kVAC, Output to Baseplate 1.5kVDC for S models, 500VDC for F models			
Isolation Resistance	Ω	Output to baseplate: 100MΩ Ohm at 500VDC, 25°C ambient, 70%RH			
Vibration (non operating)		10-55Hz (1 min sweep), constant amplitude 0.825mm (max 49m/s²), X, Y, Z 1 hour each			
Shock		196.1m/s²			
Safety Certifications		UL60950-1, CSA60950-1 (cUL), EN60950-1, CE mark (LVD)			
Weight	g	250	250	300	500
Size (WxHxL)	mm	61 x 12.7 x 116.8mm		70 x 12.7 x 122mm	100 x 13.4 x 160mm
	in	2.4 x 0.5 x 4.6"		2.76 x 0.5 x 4.8"	3.94 x 0.53 x 6.3"
Warranty	yrs	2			

Notes: (Consult Installation Manual for detailed specifications, test methods and application notes)

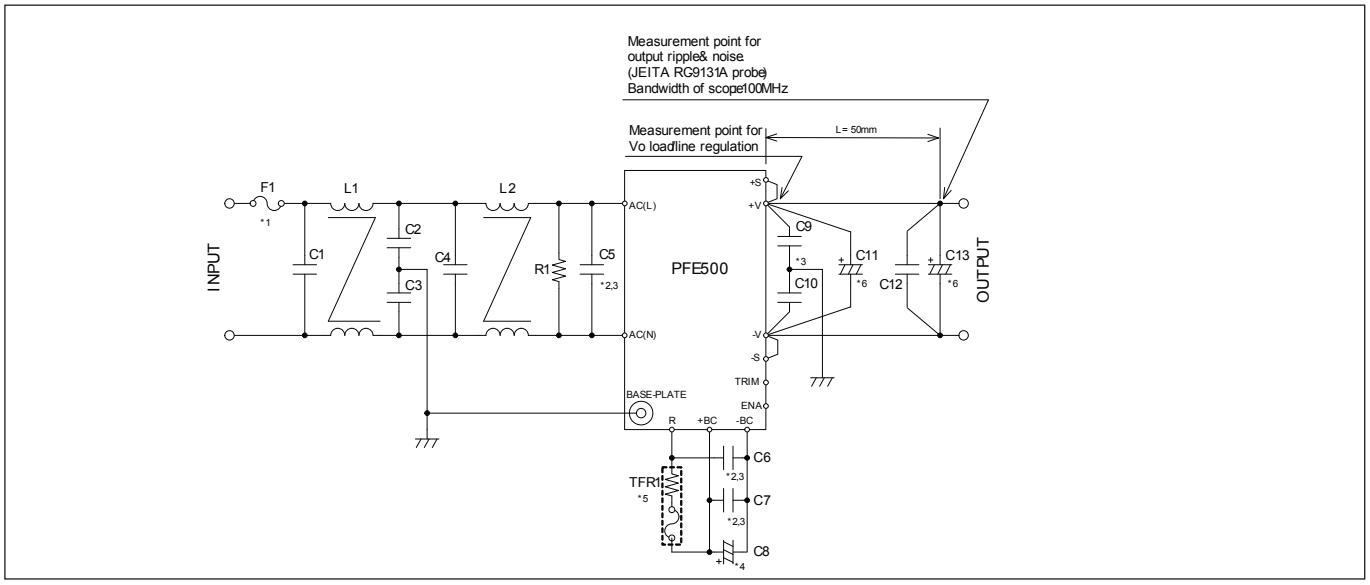
1) External components are required, **Consult application notes.**
2) PFE500-12, PFE500F-12: -40°C to 85°C. **See instruction manuals for derating curves.** PFE1000F28 & PFE1000F48: -40°C to 85°C below 170VAC input voltage. **See instruction manuals for derating curves.**
3) PFE500F, PFE1000F: 500VDC Output to baseplate

Model Selector

Model	Output Voltage (V)	Adjust. Range (V)	Maximum Current (A)	Maximum Wattage (W)	Load Reg. (mV)	Line Reg. (mV)	Efficiency typ (5)
PFE300S-12	12	9.6 - 14.4	25	300	48	48	81 / 83
PFE500S-12	12	9.6 - 14.4	33	396	48	48	82 / 83
PFE500F-12	12	9.6 - 14.4	42	504	48	48	81 / 83
PFE1000F-12	12	9.6 - 14.4	60	720	48	48	80 / 82
PFE300S-28	28	22.4 - 33.6	10.8	302	56	56	83 / 85
PFE500S-28	28	22.4 - 33.6	18	504	56	56	84 / 86
PFE500F-28	28	22.4 - 33.6	18	504	56	56	84 / 86
PFE1000F-28	28	22.4 - 33.6	36	1008	56	56	84 / 86
PFE300S-48	48	38.4 - 57.6	6.3	302	96	96	84 / 86
PFE500S-48	48	38.4 - 57.6	10.5	504	96	96	84 / 86
PFE500F-48	48	38.4 - 57.6	10.5	504	96	96	84 / 86
PFE1000F-48	48	38.4 - 57.6	21	1008	96	96	84 / 86
PFE700S-48	51	None	14	714	50 - 57V (6)		86 / 89

(5) 100 / 200VAC
(6) Total regulation range

PFE500S Basic connection



Heatsink Table (PFE-S Models only)

Heatsink	Size (mm)	Thermal Resistance
HAF-10L	116.8 x 25.4 x 61	2.2°C/W
HAF-15L	116.8 x 38.1 x 61	1.9°C/W
HAF-15T	116.8 x 38.1 x 61	1.5°C/W

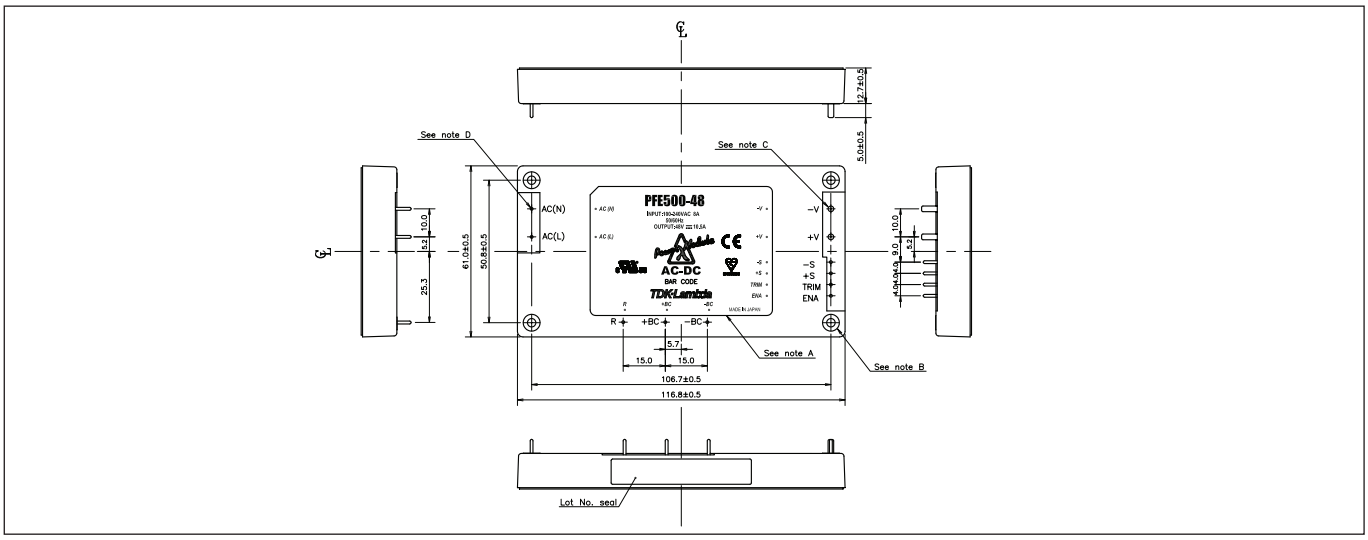
Heatsink Table (PFE-F Models only)

PFE500-F		
HAL-F12T	122 x 35 x 69.9	0.97°C/W
PFE1000-F		
HAM-F10T	160 x 33.4 x 100	0.78°C/W

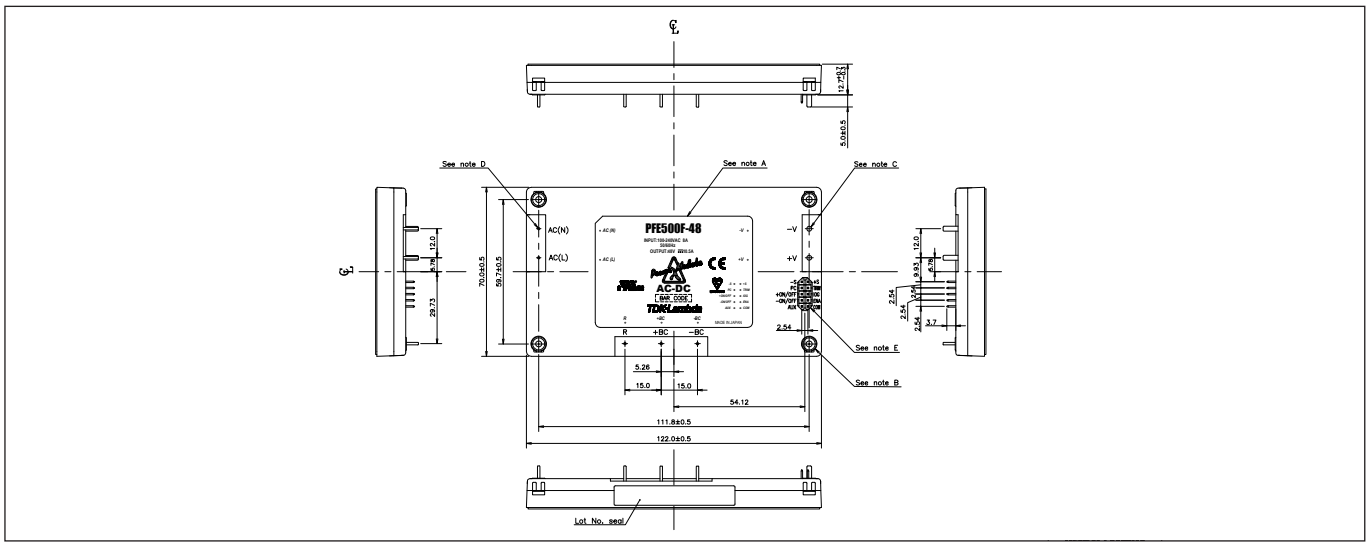
Options

Suffix	Description
Blank	M3 tapped mounting inserts (4)
/T	3.3mm non-threaded inserts (4)

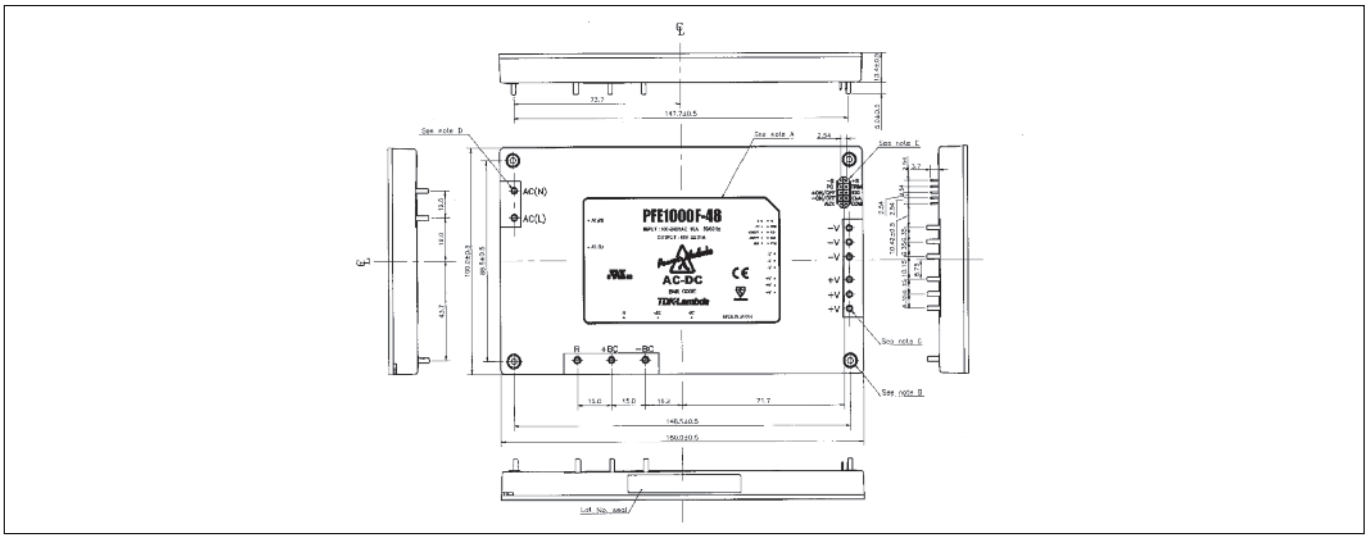
Outline Drawing PFE500S & PFE700S



Outline Drawing PFE500F



Outline Drawing PFE1000F



- Suitable for use in Custom Power Supplies
- Provides high voltage DC to TDK-Lambda's PH & PAF Power Modules
- Parallel operation on PF Series
- 12.7mm profile

PF Series

Rectifier & Power Factor Correction Modules

PF Features and Benefits

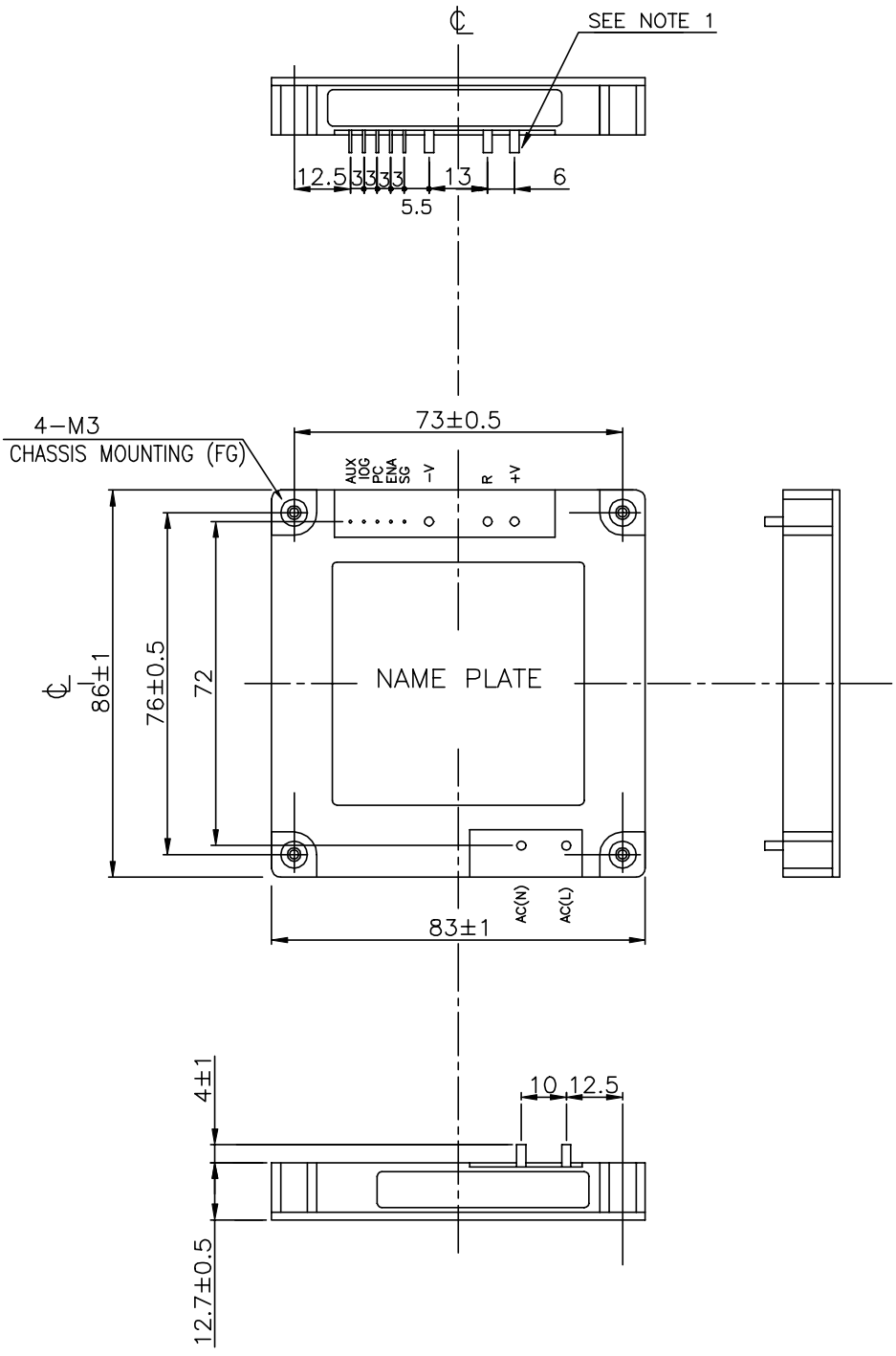
Features	Benefits
• Low profile	• Assist system integration
• Parallel	• For higher power or N+1 operation
• Power Factor corrected (PF)	• Supports Global Use
• Operation up to 85˚C	• Operates in harsh environments

Specifications

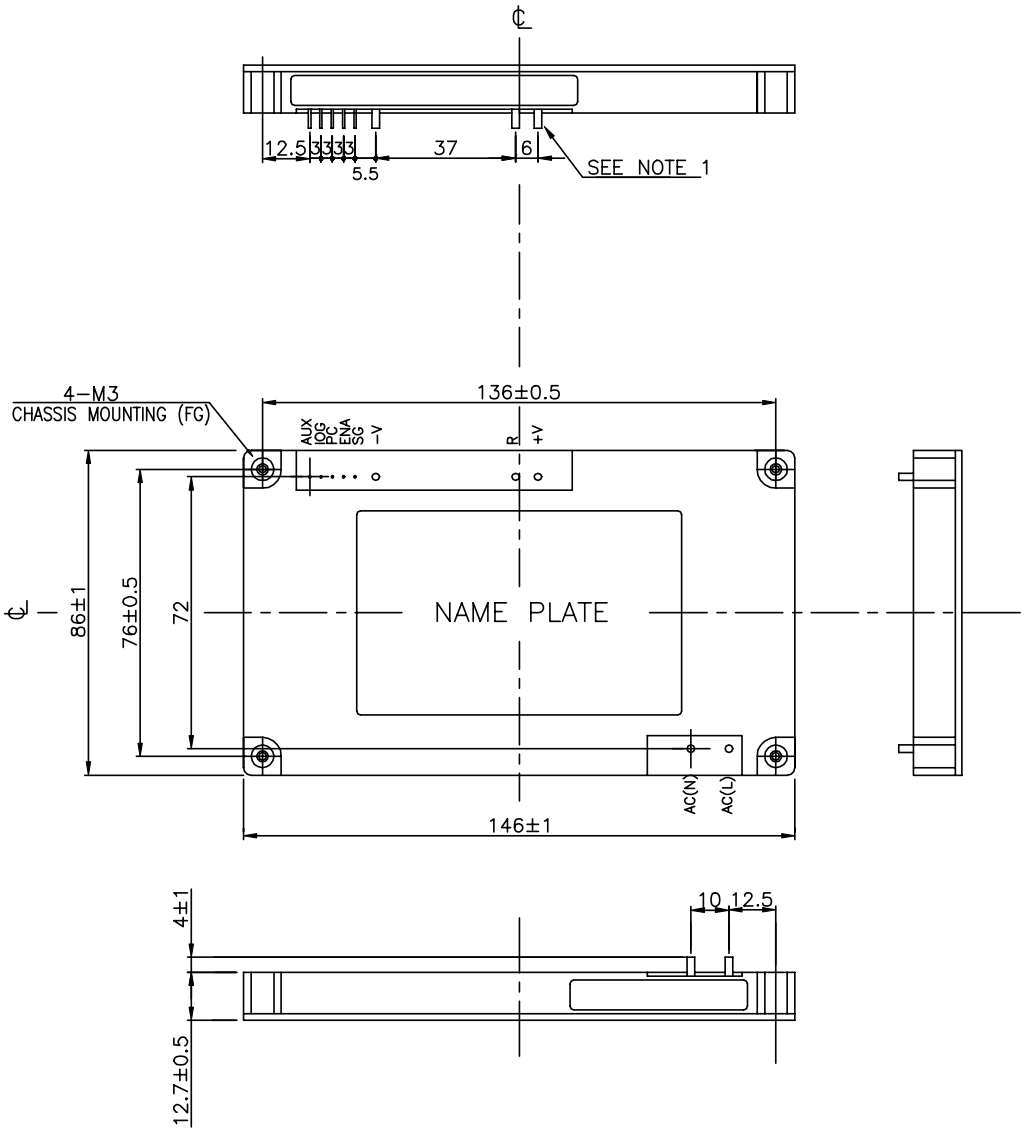
Items		PF500A-360	PF1000A-360
AC Input Voltage range & Frequency	VAC	85-265 wide range	
Input Frequency	-	47 - 63Hz	
Output Voltage	VDC	360	
Output Power at 100/200VAC	W	504/756W	1008/1512W
Load Regulation	-	10V	
Line Regulation	-	5V typical	
Inrush Current	A	External pins provided connection for in rush resistor	
Efficiency (typ) at full load	%	90% (100VAC), 95% (200VAC)	
Power Factor	-	Meets EN61000-3-2 (0.95 typical)	
Overcurrent Protection	-	Converter shutdown	
Overvoltage Protection	V	390 - 400VDC, manual reset	
Thermal Shutdown	-	Shuts down Inverter, manual reset	
Inverter Good Signal	-	Yes, when inverter is operating correctly	
Enable Signal	-	Signal provided to enable "PH" DC-DC converters	
Parallel Connection	-	Single wire current share	
Auxiliary Output Voltage	-	Yes - see installation manual	
Operating Baseplate Temperature	°C	-20°C to +85°C (no derating)	
Storage Temperature	°C	-40°C to +85°C	
Cooling	-	Conduction (see installation manuals for heatsinks)	
Withstand Voltage	-	Input - Ground 3kVAC for 1 min	
Safety Agency Approvals	-	UL60950-1, CSA22.2 No.60950-1, EN60950-1, & CE Mark	
Weight	g	130	200
Size (WxHxD)	mm	See outline line drawings	
Warranty	yrs	2	

Notes: (Consult Installation Manual for detailed specifications, test methods and application notes)

Outline Drawing PF500A



Outline Drawing PF1000A



Innovating Reliable Power TDK·Lambda

- Standard Sixteenth Brick Footprint (DOSA)
- 36-75VDC Input
- 1.2V 30A - 12V 6.5A Nominal Outputs
- Through Hole Mounting
- Low 12.7mm Profile
- 1500VDC Basic Isolation

iSA Series

36 - 82.5W

Sixteenth Brick Converter

iSA Features and Benefits

Features	Benefits
• High operating efficiency (up to 90%)	• Reduced system heating
• Constant switching frequency	• Easier system filtering
• 44% smaller than eighth brick	• Optimization of board space

Specifications

ITEMS / MODEL		iSA480						
Nominal Output Voltage	VDC	1.2	1.5	1.8	2.5	3.3	5	12
Input Voltage Range	VDC	36 to 75						
Input Current (max)	A	4						
Output Voltage Tolerance	VDC	1.164-1.236	1.45-1.55	1.74-1.86	2.42-2.58	3.20-3.40	4.85-5.15	11.58-12.42
Ripple & Noise (max) (pk to pk)	mV	75			100			200
Line Regulation (max)	mV	7					10	24
Load Regulation (max)	mV	8					10	24
Overload Protection	%	Inception- 130-147% of rated output; Short circuit auto recovery						
Overvoltage Protection	VDC	1.5-2.0	1.7-2.3	2.1-2.6	2.7-3.5	3.75-4.65	5.7-6.7	13.6-15.7
Remote Sense	-	Yes						
Remote On / Off	-	Positive and Negative Logic available, see Feature Set						
Temperature (operating)	°C	-40°C to +125°C						
Temperature (storage)	°C	-55°C to +125°C						
Humidity (operating)	-	20 - 95% RH Non condensing						
Humidity (storage)	-	10 - 95% RH Non condensing						
Cooling	-	Convection or forced air						
I/O Isolation Voltage	VDC	1500						
Vibration (non operating)	-	5 to 50Hz @ 0.5g (4.9m/s^2), and 50 to 500Hz @ 1.5g (14.7m/s^2) per Bellcore TR-EOP-000063-5.4.4						
Shock	-	196.1m/s^2						
Safety Agency Approvals	-	UL60950 (US and Canada), VDE0805 (IEC60950), CB scheme (IEC60950), CE Mark (LVD)						
Weight (max)	g	30.4						
Size	mm	33 x 22.9 x 12.7						
Warranty	yrs	3						

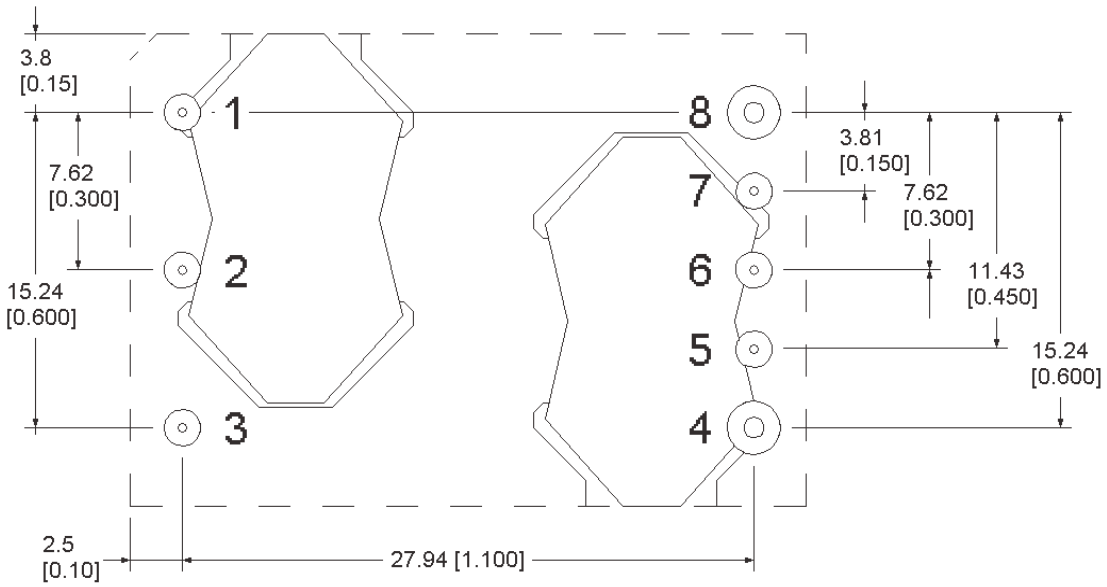
Innovating Reliable Power TDK·Lambda

Model Selector

Model	Voltage (V)	Adjust Range (V)	Max. Curr. (A)	Max. Output Power (W)	Efficiency at Full Load (%)
iSA48007A120V-001-R	12	10.8 - 13.2	6.5	78	90
iSA48007A120V-007-R	12	10.8 - 13.2	6.5	78	90
iSA48015A050V-001-R	5	4.5 - 5.5	15	75	90
iSA48025A025V-001-R	2.5	2.25 - 2.75	25	62.5	85
iSA48025A033V-000-R	3.3	2.97 - 3.63	25	82.5	88
iSA48025A033V-001-R	3.3	2.97 - 3.63	25	82.5	88
ISA48030A012V-000-R	1.2	1.08 - 1.32	30	36	75
ISA48030A012V-001-R	1.2	1.08 - 1.32	30	36	75
ISA48030A015V-001-R	1.5	1.35 - 1.65	30	45	79
ISA48030A018V-001-R	1.8	1.62 - 1.98	30	54	82

NB other configurations on request

Recommended Hole Pattern



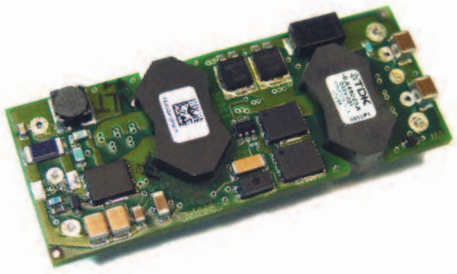
Feature Set

Feature Set	Positive Logic On / Off	Negative Logic On / Off	0.110" Pin Len.	0.180" Pin Len.	0.145" Pin Len.	Latching OVP
00	X				X	
01		X			X	
02	X		X			
03		X	X			
06	X			X		
07		X		X		
11		X			X	X
17		X		X		X

PIN Assignments

Pin	Function
1	Vin (+)
2	On / Off
3	Vin (-)
4	Vout (-)
5	Sense (-)
6	Trim
7	Sense (+)
8	Vout (+)

Innovating Reliable Power TDK·Lambda



- Standard Eighth Brick Footprint
- 36-75VDC Input
- 3.3V 20A - 28V 2.67A Nominal Output
- Through Hole Mounting
- Low 8.8mm Profile
- 1500VDC Basic Isolation

iEA Series

66 -78W

Eighth Brick DC-DC Converters

iEA Features and Benefits

Features	Benefits
• High operating efficiency (up to 91%)	• Reduced system heating
• Constant switching frequency	• Easier system filtering
• Open frame design	• Better thermal performance

Specifications

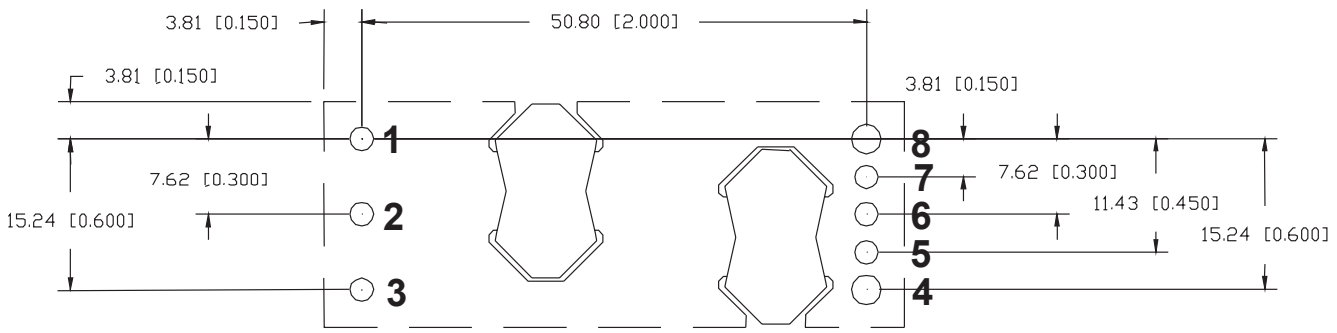
MODEL / ITEMS		iEA Series					
Nominal Output Voltage	VDC	3.3	5	12	15	18	28
Input Voltage Range	VDC	36 - 75					
Input Current (max)	A	4.5					
Output Voltage Tolerance	VDC	3.20 - 3.40	4.85 - 5.15	11.58 - 12.42	14.47 - 15.52	17.28 - 18.72	26.88 - 29.12
Ripple & Noise (max) (pk-pk) (1)	mV	100	125	200	150	200	250
Line Regulation (max)	mV	7	10	24	35	45	70
Load Regulation (max)	mV	8	10	24	35	45	70
Overload Protection (typ)	A	29	20	8.5	6	4.4	4
Overvoltage Protection	VDC	3.75 - 4.4	5.7 - 6.7	13.6 - 15.7	16.8 - 22.0	20.0 - 26.0	32.0 - 38.0
Remote Sense	-	Yes					
Remote On / Off	-	Positive or Negative Logic, see Model Selector					
Temperature (operating)	°C	-40°C to +125°C					
Temperature (storage)	°C	-55°C to +125°C					
Humidity (operating)	-	20 - 95% RH Non condensing					
Humidity (storage)	-	10 - 95% RH Non condensing					
Cooling	-	Convection or forced air					
Isolation Voltage	VDC	1500					
Vibration (non operating)	-	5~50Hz@0.5g (4.9m/s^2), & 50~500Hz@1.5g (14.7m/s^2) per Bellcore TR-EOP-000063-5.4.4					
Shock	-	196.1m/s^2					
Safety Agency Approvals	-	UL60950 (US and Canada), VDE0805 (IEC60950), CB scheme (IEC60950), CE Mark (LVD)					
Weight (max)	g	30.4					
Size	mm	58.4 x 22.9 x 8.8					
Warranty	yrs	3					

Notes: (1) Measured across one 0.1μF ceramic capacitor and one 10μF tantalum ceramic capacitor; BW = 20MHz

Model Selector

Model	Voltage Output (V)	Voltage Adjust (V)	Output Curr. (A)	Max. Output Power (W)	Efficiency at Full Load (%)	Pos. Logic On/Off	Neg. Logic On/Off
iEA48020A033V-000-R	3.3	2.97 - 3.63	20	66	90	X	
iEA48020A033V-001-R	3.3	2.97 - 3.63	20	66	90		X
iEA48015A050V-000-R	5	4.5 - 5.5	15	75	90	X	
iEA48015A050V-001-R	5	4.5 - 5.5	15	75	90		X
iEA48007A120V-000-R	12	10.8 - 13.2	7	78	91	X	
iEA48007A120V-001-R	12	10.8 - 13.2	7	78	91		X
iEA48005A150V-001-R	15	13.5 - 16.5	4.5	67.5	90		X
iEA48004A180V-001-R	18	16.2 - 19.8	3.75	67.5	90.5		X
iEA48003A280V-001-R	28	19.6 - 30.8	2.67	75	90		X

Recommended Footprint (Top view)



Pinout

Pin#	Function
1	Vin (+)
2	On / Off
3	Vin (-)
4	Vout (-)
5	Sense (-)
6	Trim
7	Sense (+)
8	Vout (+)

- Standard Quarter Brick Footprint
- 18-36VDC, 36-75VDC & Wide Range 18-60V Inputs
- 3.3V 40A - 15V 10A Nominal Outputs
- Through Hole Mounting
- Low 10.41mm Profile
- 1500VDC Basic Isolation

iQE Series

96 - 204W

Quarter Brick Converter

iQE Features and Benefits

Features	Benefits
• High operating efficiency (>90%)	• Reduced system heating
• Constant switching frequency	• Easier system filtering
• Low component count	• Higher reliability

Specifications

ITEMS / MODEL		iQE Series				
Nominal Output Voltage	VDC	3.3	5	8	12	15
Input Voltage Range	VDC	See model Selector				
Input Current (max)	A	10				
Output Voltage Tolerance	VDC	3.2 - 3.4	4.85 - 5.15	7.76 - 8.24	11.58 - 12.42	14.48 - 15.52
Ripple & Noise (max) (pk to pk) (1)	mV	150	150	150	150	150
Line Regulation (max)	mV	10	15	25	30	30
Load Regulation (max)	mV	10	30	25	30	30
Overload Protection (typ)	%	Inception - 133-158% of rated output; Short circuit - auto recovery				
Overvoltage Protection	VDC	3.8 - 4.6	5.7 - 6.7	8.9 - 11	13.6 - 16.5	16.7 - 21
Remote Sense	-	Yes				
Remote On / Off	-	Positive or Negative Logic available, see Model Selector				
Temperature (operating)	°C	-40°C to +125°C				
Temperature (storage)	°C	-55°C to +125°C				
Humidity (operating)	-	20 - 95% RH Non condensing				
Humidity (storage)	-	10 - 95% RH Non condensing				
Cooling	-	Convection or forced air				
Isolation Voltage	VDC	1500				
Vibration (non operating)	-	5 to 50Hz @ 0.5g (4.9m/s^2), and 50 to 500Hz @ 1.5g (14.7m/s^2) per Bellcore TR-EOP-000063-5.4.4				
Shock	-	196.1m/s^2				
Safety Agency Approvals	-	UL60950 (US and Canada), VDE0805 (IEC60950), CB scheme (IEC60950)				
Weight (max)	g	50				
Size	mm	57.9 x 36.8 x 10.41				
Warranty	yrs	3				

Notes: (1) Measured across one 22μF and one 0.1μF ceramic capacitor; BW = 20MHz

Model Selector

Model	Input Voltage (V)	Output Voltage (V)	Adjust Range (V)	Max. Current (A)	Max. Output Power (W)	Efficiency
IQE24007A150V-001-R	18-36	15	13.5-16.5	7	105	90
IQE24007A150V-007-R	18-36	15	13.5-16.5	7	105	90
IQE24009A120V-001-R	18-36	12	10.8-13.2	9	108	88
IQE24009A120V-007-R	18-36	12	10.8-13.2	9	108	88
IQE24012A080V-001-R	18-36	8	7.2-8.8	12	96	92
IQE24012A080V-007-R	18-36	8	7.2-8.8	12	96	92
IQE24024A050V-001-R	18-36	5	4.5-5.5	24	120	90
IQE24024A050V-007-R	18-36	5	4.5-5.5	24	120	90
IQE24030A033V-001-R	18-36	3.3	2.97-3.63	30	99	90
IQE24030A033V-007-R	18-36	3.3	2.97-3.63	30	99	90
IQE48010A150V-001-R	36-75	15	13.5-16.5	10	150	91
IQE48010A150V-007-R	36-75	15	13.5-16.5	10	150	91
IQE48014A080V-001-R	36-75	8	7.2-8.8	14	112	92
IQE48017A120V-000-R	36-75	12	10.8-13.2	17	204	93
IQE48017A120V-001-R	36-75	12	10.8-13.2	17	204	93
IQE48017A120V-007-R	36-75	12	10.8-13.2	17	204	93
IQE48030A050V-000-R	36-75	5	4.5-5.5	30	150	91
IQE48030A050V-001-R	36-75	5	4.5-5.5	30	150	91
IQE48040A033V-000-R	36-75	3.3	2.97-3.63	40	132	89.5
IQE48040A033V-001-R	36-75	3.3	2.97-3.63	40	132	89.5
IQE48040A033V-007-R	36-75	3.3	2.97-3.63	40	132	89.5
IQE4W011A120V-001-R*	18-60	12	10.8-13.2	11	132	90

NB: other configurations on request *** New Wide Range Model -** Contact Sales for more information

Feature Set

Feature Set	Positive Logic On / Off	Negative Logic On / Off	0.110" Pin Len.	0.180" Pin Len.	0.145" Pin Len.
00	X				X
01		X			X
02	X		X		
03		X	X		
06	X			X	
07*		X		X	

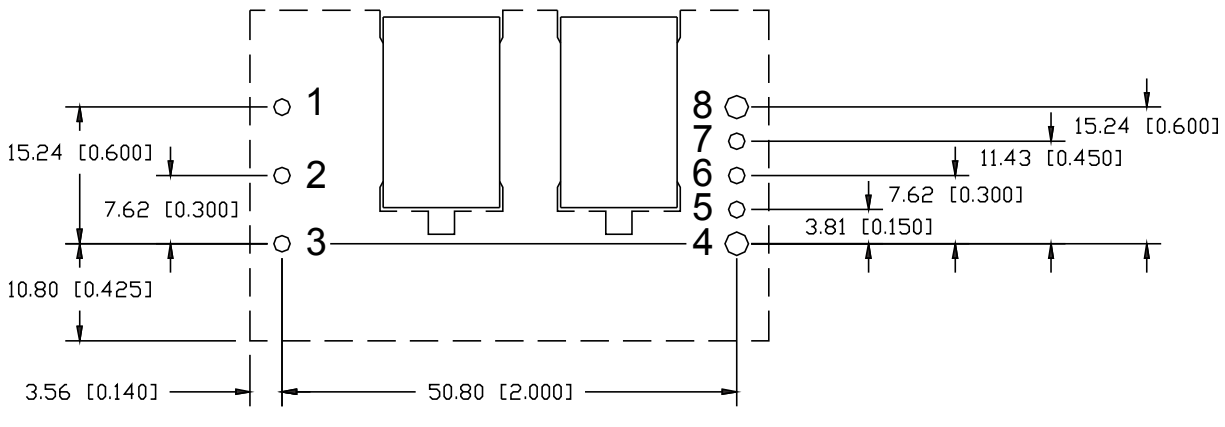
* Preferred feature set

Model Number Example: iQE24030A033V-0**07**-R

PIN Out

PIN	Function
1	Vin (+)
2	On / Off
3	Vin (-)
4	Vout (-)
5	Sense (-)
6	Trim
7	Sense (+)
8	Vout (+)

Recommended Hole Pattern (Top View)



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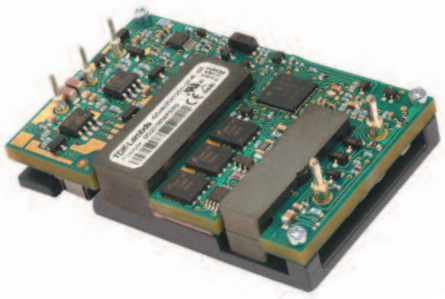


- Standard Quarter Brick Footprint
- 36-75VDC Input
- 12V 25A Output
- Through Hole Mounting
- Low 12.7mm Profile (13.21mm with baseplate)
- 1500VDC Basic Isolation

iQG Series

300W Quarter Brick converters

iQG Features and Benefits

Features	Benefits
• High operating efficiency (up to 95%)	• Starts with pre-biased output
• Reduced system heating	• Baseplate cooled
• Constant 115kHz switching frequency	• Easier system filtering
• Supports complex digital systems	• Allows for conduction cooling

Specifications

ITEMS / MODEL		iQG
Nominal Output Voltage	VDC	12V
Input Voltage Range	VDC	36 - 75VDC
Input Current (max)	A	9A
Efficiency	%	67% loading: 95%, 100% loading: 94% - 48V Input
Output Voltage Tolerance	VDC	11.1 - 12.1V
Ripple & Noise (max) (pk - pk)	mV	70mV
Line Regulation (max)	mV	100mV
Load Regulation (typical)	mV	50mV (10 - 100% load)
Overload Protection	A	Inception- 30A; Short circuit - auto recovery
Overvoltage Protection	VDC	13.7 - 15.6V (Latching)
Remote Sense	-	None
Remote On / Off	-	Negative Logic standard. Positive logic available, contact factory
Temperature (operating)	°C	-40°C to +125°C (See detailed datasheet for derating)
Temperature (storage)	°C	-55°C to -125°C
Humidity (operating)	%RH	20 - 95% RH Non condensing
Humidity (storage)	%RH	10 - 95% RH Non condensing
Cooling	-	Conduction, convection or forced air (See detailed datasheet for derating)
Isolation Voltage	VDC	1500VDC Input to Output, Input to Baseplate
Vibration (non operating)	-	5 to 50Hz@0.5g (4.9m/s^2), and 50 to 500Hz@1.5g (14.7m/s^2) per Bellcore TR-EOP-000063-5.4.4
Shock	-	196.1m/s^2
Safety Agency Certifications	-	UL60950-1 (US and Canada), VDE0805 (IEC60950-1), CB scheme (IEC60950-1)
Weight (max)	g	55g open frame, 70g with baseplate
Size (LxWxH)	mm	58.91 x 36.83 x 13.21 (Baseplate version)
Warranty	yrs	3

Model Selector

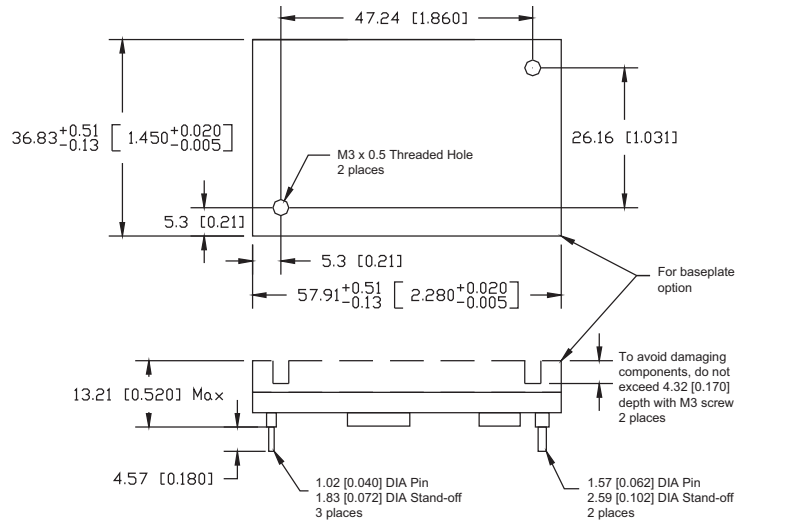
Model	Input Voltage (V)	Output Voltage (V)	Max. Curr. (A)	Max. Output Power (W)	On/Off Polarity	Pin Length	Base Plate
iQG48025A120V-101-R	36 - 75	12	25	300	Neg	0.145"	Yes
iQG48025A120V-109-R	36 - 75	12	25	300	Neg	0.180"	Yes

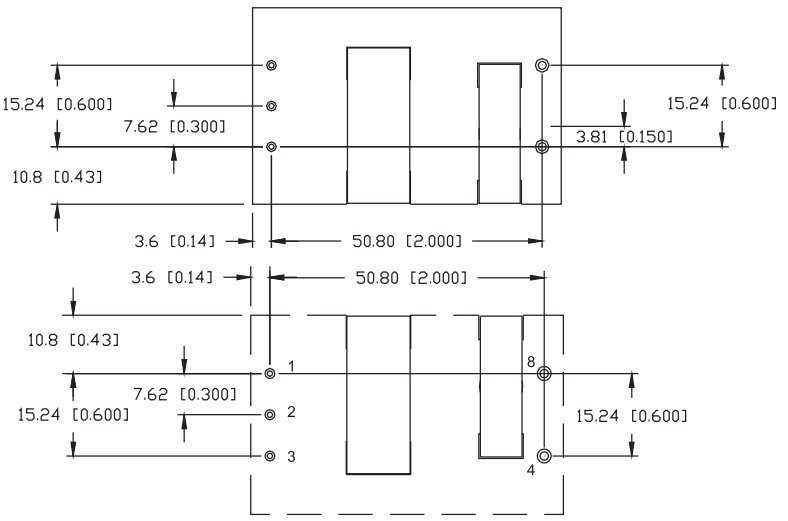
Pinout

PIN	Function	PIN	Function
1	Vin (+)	5	None
2	On / Off	6	None
3	Vin (-)	7	None
4	Vout (-)	8	Vout (+)

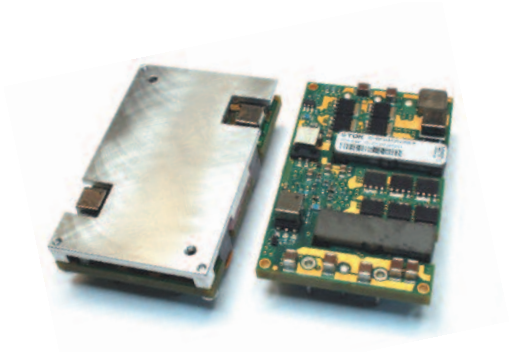
Recommended Footprint iQG Series (Top view)

Dimensions are in mm [in]. Unless otherwise specified tolerances are: x.x ± 0.5 [0.2], x.xx and x.xxx ± 0.25 [0.010]





Recommended hole pattern (top view)



- Standard Quarter Brick Footprint
- 18-36 & 36-75VDC Inputs
- From 2.5V 60A up to 12V 25A Nominal Outputs
- Through Hole Mounting
- 1500VDC Basic Isolation
- Baseplate cooling

iQL Series

72-308W

Quarter Brick Converter

iQL Features and Benefits

Features	Benefits
• High operating efficiency (up to 93.5%)	• Reduced system heating
• Constant switching frequency	• Easier system filtering
• Baseplate	• Conduction or heatsink cooling

Specifications

ITEMS / MODEL		iQL				
Nominal Output Voltage	VDC	2.5	3.3	5	8.3	12
Input Voltage Range	VDC	See Model Selector				
Ripple & Noise (max)(pk-pk) (1) mV	30	100	80	100	100	120
Line Regulation (max)	mV	5	6.6	10	30	60
Load Regulation (max)	mV	5	15	10	40	60
Overload Protection Threshold (3)	A	69	70	50	34	27.5
Overvoltage Protection (Typ) (2)	VDC	3.1	4.1	6.1	10	14.7
Overtemperature Protection (3)	-	Yes				
Remote Sense	-	Yes except 8.3V models and above				
Remote On / Off	-	Negative Logic				
Temperature (operating)	°C	-40°C to +115°C		-40°C to +125°C	-40°C to +119°C	-40°C to +118°C
Temperature (storage)	°C	-55°C to +125°C				
Humidity (operating)	-	20 to 95% (non-condensing)				
Humidity (storage)	-	10 to 95% (non-condensing)				
Cooling	-	Conduction, convection, or forced air				
Isolation Voltage	VDC	1500 Input - Output, 1500 Input - Baseplate				
Vibration (non operating)	-	5 to 50Hz@0.5g (4.9m/s^2), and 50 to 500Hz@1.5g (14.7m/s^2) per Bellcore TR-EOP-000063-5.4.4				
Shock	-	50 G at 6 ms pulse in three axes				
Safety Agency Approvals	-	UL60950 (US and Canada),VDE0805, CB scheme IEC950), CE Mark (EN60950)				
Weight (max)	g	55g open-frame, 70g with the base-plate				
Size	mm	57.9 x 36.8 x 13.21				
Warranty	yrs	3				

Notes:

(1) Measured across one 0.1μF, one 1.0μF, one 47μF ceramic capacitor, and one 440μF electrolytic capacitor located 2 inches away. BW = 20MHz.

(2) Latching

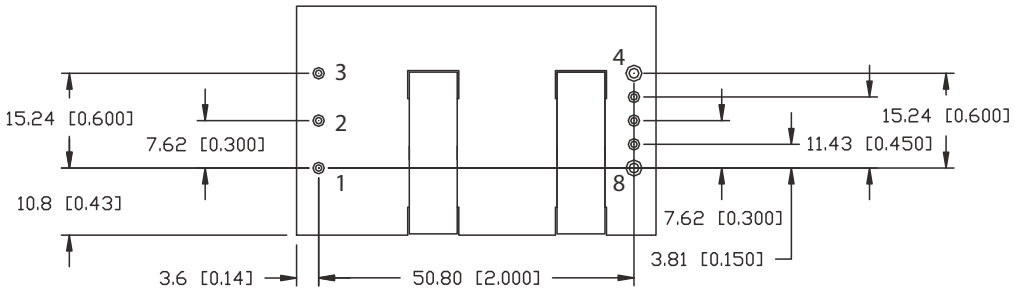
(3) Non-latching

Model Selector

Model	Input Voltage (V)	Output Voltage (V)	Adjust Range (V)	Max. Curr. (A)	Max. Output Power (W)	Efficiency at Full Load (%)
IQL24024A083V-009-R	18 - 36	8.3	6.64 - 9.13	24	199	89
IQL24040A050V-009-R	18 - 36	5	4.0 - 5.5	40	200	91
IQL24050A033V-009-R	18 - 36	3.3	2.64 - 3.63	50	165	90.5
IQL48011A280V-009-R	36 - 75	28	22.4 - 30.8	11	308	92.5
IQL48025A120V-001-R	36 - 75	12	9.6 - 13.2	25	300	94
IQL48025A120V-009-R	36 - 75	12	9.6 - 13.2	25	300	94
IQL48025A120V-0B9-R	36 - 75	12	9.6 - 13.2	25	300	94
IQL48030A083V-009-R	36 - 75	8.3	n/a	30	249	90.5
IQL48045A050V-009-R	36 - 75	5	4.0 - 5.5	45	225	91
IQL48045A050V-0B9-R	36 - 75	5	4.0 - 5.5	45	225	91
IQL48060A025V-0B9-R	36 - 75	2.5	2.0 - 2.75	60	150	89
IQL48060A033V-009-R	36 - 75	3.3	2.64 - 3.63	60	198	91
IQL48060A033V-0B9-R	36 - 75	3.3	2.64 - 3.63	60	198	91

NB: other configurations on request

Recommended Footprint (Top View) iQL Series



Pinout

PIN	Function	PIN	Function
1	Vin (+)	5	Sense (-) (if applicable-not fitted on 8.3V or above)
2	On / Off	6	Trim
3	Vin (-)	7	Sense (+) (if applicable-not fitted on 8.3V or above)
4	Vo (-)	8	Vo (+)

Feature Set

Feature Set	On / Off Logic	Trim Pin	Pin Length	Base Plate
00	Positive	Yes	0.145	Yes
01	Negative	Yes	0.145	Yes
08	Positive	Yes	0.180	Yes
09*	Negative	Yes	0.180	Yes
B8	Positive	Yes	0.180	No
B9	Negative	Yes	0.180	No
L8	Positive	No	0.180	Yes
L9	Negative	No	0.180	Yes

* Preferred feature set

Model Number Example: iQL48030A096V-009-R

- 60 - 160VDC Input to EN50155/IEC60571
- EN/IEC 61373 Shock and Vibration
- Base plate Cooled
- Full Power at +100°C base plate
- Five Year Warranty

Key Market Segments & Applications

Railway Applications
Suitable for battery powered railway systems
Power Plants

CN-A Series

30W to 200W 110VDC Input
Quarter Brick & Half Brick Railway DC-DC Converters

CN-A Features and Benefits

Features	Benefits
• Small Size	• Less PCB space used
• Quarter & Half Brick Footprint	• Industry Standard size
• Full Power from -40˚C to +100˚C	• No Derating required - covers TX class for Railway
• UVLO Function	• Protects battery against deep discharges

Specifications

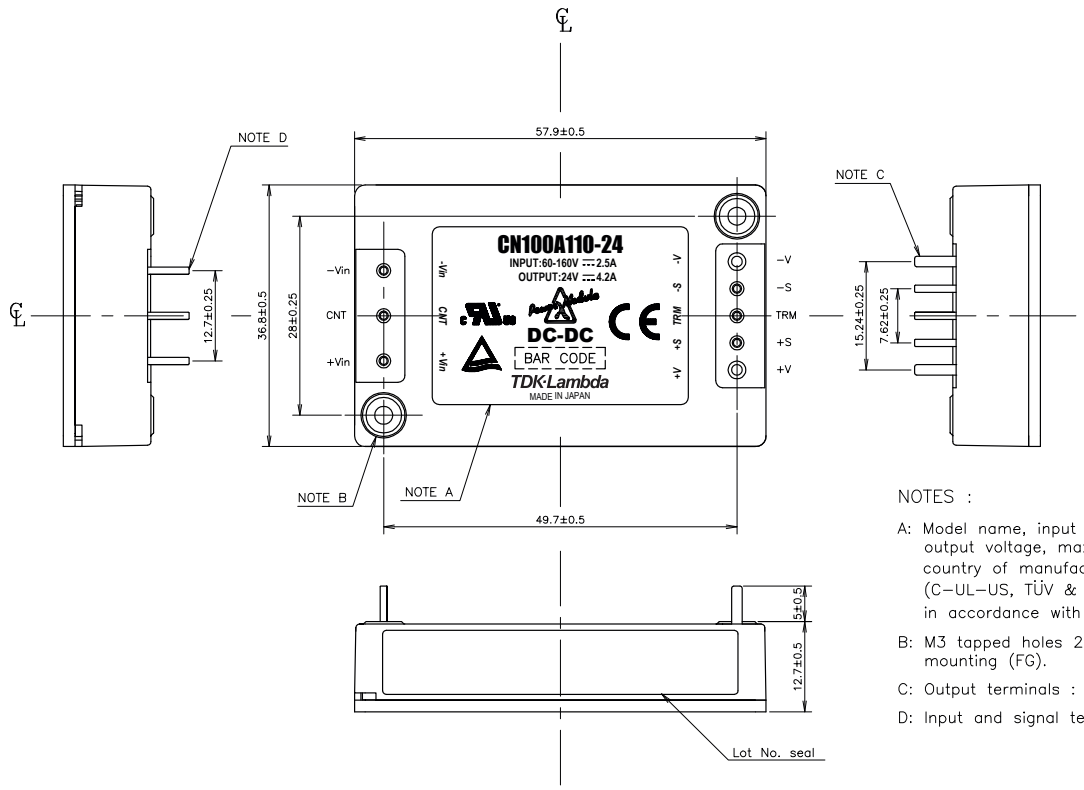
ITEMS / MODELS		CN30A110, CN50A110, CN100A110, CN200A110 See model selector			
Nominal Output Voltage	VDC	5V	12V	15V	24V
Input Voltage Range	VDC	60 - 160VDC			
Input Current	A	0.34 - 2.16A (model dependant)			
Output Voltage Adjustment	VDC	4.5 - 6	10.8 - 13.2	13.5 - 16.5	21.6 - 26.4
Ripple & Noise (max) pk-pk	mV	100	150	150	240
Line Regulation (max)	mV	20	48	60	96
Load Regulation (max)	mV	40	96	120	192
Overcurrent Protection	%	105 - 140%			
Overvoltage Protection	%	125 - 145% (Cycle input or remote on/off to reset)			
Remote Sense	-	Yes			
Remote On/Off	-	Yes; Low = ON, Open = OFF			
Parallel Operation	-	CN30-50 : No / CN200 : 5V : No; 12, 15, 24V : Yes			
Operating Temperature	°C	-40°C to +100°C Baseplate			
Storage Temperature	°C	-40°C to +100°C			
Temperature Coefficient	%/°C	0.02%/°C			
Humidity (non condensing)	%RH	5 - 95% RH Operating and Non Operating			
Cooling	-	Conduction (See Installation Manual for heatsink selection)			
Withstand Voltage	VAC	Input to Baseplate: 1.5kVAC; Input to Output 3.0kVAC for I min.;			
		Output to Baseplate: 500VAC for 1 min			
Isolation Resistance	Ω	>100MΩ at 25°C and 70%RH, Output to Base plate 500VDC			
Vibration	-	Non Operating, 10-55Hz (sweep for 1 min.) Amplitude 0.825mm			
		constant (Max 49 m/s²) X,Y,Z 1 hour each IEC61373 - Category 1, Grade B			
Shock	-	196.1m/s², EN/IEC61373 - Category 1, Grade B			
Safety Agency Certifications	-	UL60950-1, CSA60950-1, EN60950-1, CE LVD			
Weight (Typ)	g	CN30-50 : 70 / CN200 : 100			
Size (WxHxD)	mm	CN30A - 100A : 36.8 x 12.7 x 57.9, CN200A : 61 x 12.7 x 57.9			
Warranty	yrs	5			

Notes: See Installation Manual for full details, test methods of parameters and application notes

Model Selector

Model	Voltage (V)	Output Current (A)	Maximum Power (W)	Input Current (A)	Efficiency (%) (100% load, 110VDC In)
CN30A110-5	5	6.0	30.0	0.34	83
CN50A110-5	5	10.0	50.0	0.55	85
CN100A110-5	5	20.0	100.0	1.08	85
CN200A110-5	5	40.0	200.0	2.16	85
CN30A110-12	12	2.5	30.0	0.34	84
CN50A110-12	12	4.2	50.4	0.55	86
CN100A110-12	12	8.4	100.8	1.05	88
CN200A110-12	12	16.7	200.4	2.09	88
CN30A110-15	15	2.0	30.0	0.34	84
CN50A110-15	15	3.4	51.0	0.55	86
CN100A110-15	15	6.7	100.5	1.05	88
CN200A110-15	15	13.4	201	2.1	88
CN30A110-24	24	1.3	31.2	0.34	84
CN50A110-24	24	2.1	50.4	0.55	86
CN100A110-24	24	4.2	100.8	1.05	88
CN200A110-24	24	8.4	201.6	2.11	88

Outline Drawing CN30A-CN100A



NOTES :

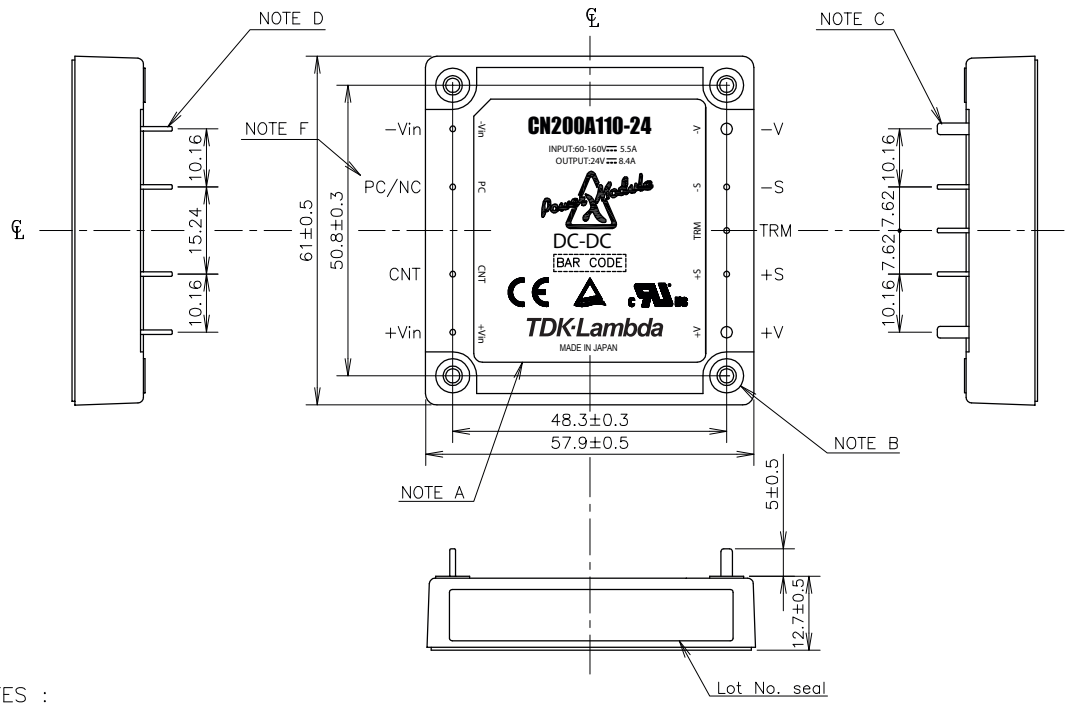
A: Model name, input voltage range, nominal output voltage, maximum output current, country of manufacture and safety marking (C–UL–US, TÜV & CE marking) are shown here in accordance with the specifications.

B: M3 tapped holes 2 for customer chassis mounting (FG).

C: Output terminals : 2–ø1.5

D: Input and signal terminals : 6–ø1

Outline Drawing CN200A



NOTES :

A: Model name, input voltage range, nominal output voltage, maximum output current, country of manufacture and safety marking (C−UL−US, TÜV & CE marking) are shown here in accordance with the specifications.

B: M3 tapped holes 4 for customer chassis mounting (FG).

C: Output terminals : 2−ø2.0

D: Input and signal terminals : 7−ø1

E: Unless otherwise specified dimensional tolerance : ±0.25

F: 5V output model : NC
12V, 15V, 24V output models : PC

Innovating Reliable Power TDK·Lambda

- Standard Half Brick Footprint (DOSA)
- 36 - 75VDC Input
- 3.3V 30A - 5V 60A Nominal Outputs
- Through Hole Mounting
- 1500VDC Basic Isolation

iHG Series

50 - 300W, 48V Input
Half Brick Converter

iHG Features and Benefits

Features	Benefits
• High operating efficiency (up to 92.5%)	• Reduced system heating
• Constant switching frequency	• Easier system filtering
• Low component count	• Higher reliability

Specifications

ITEMS / MODEL			iHG48030A033V-002-R	iHG48070A033V-001-R	iHG48010A050V-002-R	iHG48060A050V-002-R
Nominal Output Voltage		VDC	3.3	3.3	5	5
Input Voltage Range		VDC	36 - 75			
Efficiency		%	92.5	90	89	91
Ripple & Noise (max)(pk-pk)	(1)	mV	50	50	60	60
Line Regulation (max)		mV	10	10	10	12
Load Regulation (max)		mV	10	10	10	12
Overload Protection Threshold	(3)	A	38	82	13.8	70
Overvoltage Protection	(2)	VDC	4.1	4.1	6.1	6.1
Overtemperature Protection	(3)	-	Yes			
Remote Sense		-	yes			
Remote On-Off		-	Positive or Negative Logic Available, see Model Selector			
Temperature (operating)		°C	-40°C to +115°C	-40°C to +123°C	-40°C to +125°C	-40°C to +125°C
Temperature (storage)		°C	-55°C to +125°C			
Humidity (operating)		-	20 to 95% (non-condensing)			
Humidity (storage)		-	10 to 95% (non-condensing)			
Cooling		-	Convection or Forced Air			
Isolation Voltage		VDC	1500			
Vibration (non operating)		-	5 to 50Hz@0.5g (4.9m/s^2), and 50 to 500Hz@1.5g (14.7m/s^2) per Bellcore TR-EOP-000063-5.4.4			
Shock		-	50 G at 6ms pulse in three axes			
Safety Agency Approvals		-	UL60950 (US and Canada), VDE0805, CB scheme (IEC950), CE Mark (EN60950)			
Weight (max)		g	63			
Size		mm	59.94 x 56.90 x 11.68			
Warranty		yrs	3			

Notes:

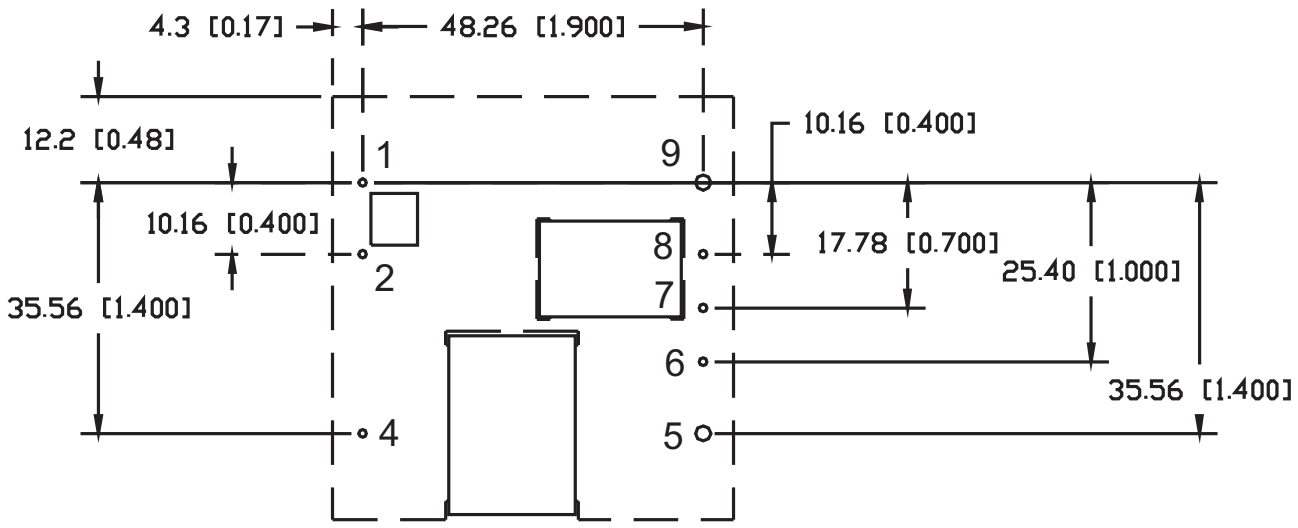
(1) Measured across one 10μf, one 0.47μf, one 0.1μf ceramic capacitors, and one 220μf electrolytic capacitor. BW = 20MHz.
(2) Latching
(3) Non-latching

Model Selector

Model	Input Volt. (V)	Output Volt. (V)	Adjust Range (V)	Output Current (A)	Max. Output Power (W)	On/Off Logic	Pin Length (in)
iHG48010A050V-002-R	36 - 75	5	2.5 - 5.5	10	50	P	0.145
IHG48030A033V-002-R	36 - 75	3.3	1.65 - 3.63	30	99	P	0.145
IHG48060A018V-003-R	36 - 75	1.8	0.9 to 1.98	60	108	N	0.145
IHG48060A050V-002-R	36 - 75	5	2.5 - 5.5	60	300	P	0.145
IHG48070A033V-001-R	36 - 75	3.3	1.65 - 3.63	70	231	N	0.145

NB other configurations on request

Hole Pattern (Top View) iHG



Recommended hole pattern (top view)

Pinout

PIN	Function	PIN	Function
1	Vin (+)	6	Sense (-)
2	On / Off	7	Trim
3	N / A	8	Sense (+)
4	Vin (-)	9	Vout (+)
5	Vout (-)		

PAH Series

48V Input Half brick DC-DC Converters

- Industry Standard Footprint & Pinouts
- 12V output for driving non-isolated converters
- Safety Approved
- Full power at +100ºC baseplate
- Wide Adjustable Output Range

Key Market Segments & Applications

Central Office:	ATM, Sonet, DSL, ISDN, Frame relay
Broadband:	Switching Equipment, Routers
Wireless/Cellular:	Micro Cells (larger in size/10 sq. mi.) Pico Cells (smaller in size/1 to 2 sq. mi.)
Remote Electronics:	Fixed Local Loop, Fiber Optic Transmission, Microwave Transmission, Wireless Local Loop
Customer Premise:	PBX, PABX, Datacomm, Voice Systems, Video Conferencing

PAH Features and Benefits

Features	Benefits
• Wide adjustment range	• Reduces need for custom modules
• Zero Pre-load	• Eliminates heat dissipation in system
• ASIC Design	• Reduced component count, increased MTBF
• No potting materials	• Lower weight

Specifications

ITEMS \ MODELS		2.5V	3.3V	5V	12V	15V	24V	28V	48V
Efficiency (Typ)	%	75-76	79-80	83-84	85-86		86-88		88
Input Voltage range	VDC	36-76							
Output Voltage Accuracy	%	±1.6							
Max Ripple & Noise	mV	150			200		240	280	250
Max Line Regulation	mV	10			24	30	48	56	96
Max Load Regulation	mV	10			24	30	48	56	96
Overcurrent Protection	A	105 - 150% automatic recovery							
Overvoltage Protection (1)	%	120-160	120-140	125-145					135-155
Remote Sense	-	Yes							
Remote On/Off	-	Standard; Low = ON, Open = OFF /P option; Low = OFF, Open = ON)							
Operating Temperature	-	-40ºC to +100ºC baseplate							
Overtemperature	-	Shutdown between 105ºC to 130ºC, Auto restart							
Cooling	-	Conduction (See Installation Manual for heatsink selection)							
Isolation Voltage	V	Input - Baseplate 1500VAC, Input - Output 1500VAC, Output-Baseplate 500VDC							
Shock	-	196.1m/s^2							
Vibration	-	Non Operating, 10-55Hz (sweep for 1 min.)							
Amplitude	-	0.825mm constant (Max 49 m/s^2) X,Y,Z 1 hour each							
Safety Agency Approvals	-	UL60950-1, CSAC22.2 No.60950-1, EN60950-1, CE LVD							
Weight (Typ)	g	80							
Size (WxHxD)	in(mm)	2.28x0.5x2.4 (57.9x12.7x61) See outline drawing							
Warranty	yrs	2							

Notes: (1) See options table. General: See Installation Manual for full details, test methods of parameters and application notes

Model Selector

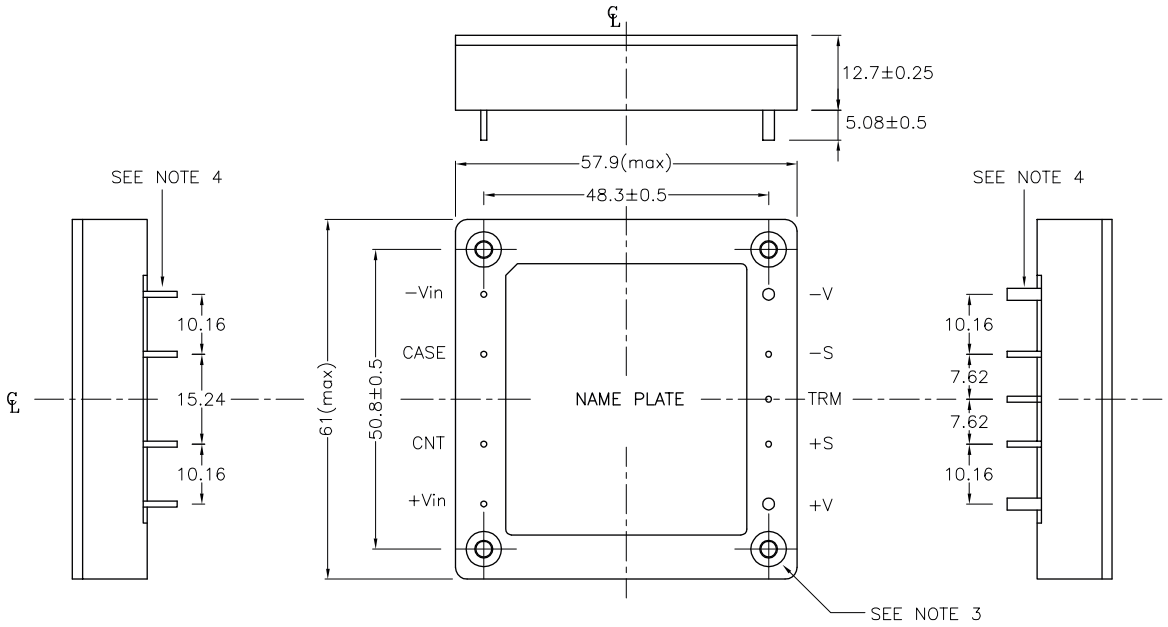
Model Name	Output Voltage	Adjustment	Output Current	Maximum Power
PAH50S48-2.5	2.5	2.25 - 2.75	11.70	29.3
PAH75S48-2.5	2.5	2.25 - 2.75	17.50	43.8
PAH100S48-2.5	2.5	2.25 - 2.75	23.40	58.5
PAH150S48-2.5	2.5	2.25 - 2.75	35.00	87.5
PAH50S48-3.3	3.3	2.97 - 3.63	11.70	38.6
PAH75S48-3.3	3.3	2.97 - 3.63	17.50	57.8
PAH100S48-3.3	3.3	2.97 - 3.63	23.40	77.2
PAH150S48-3.3	3.3	2.97 - 3.63	35.00	115.5
PAH50S48-5	5.0	3.0 - 5.75	10.00	50.0
PAH75S48-5	5.0	3.0 - 5.75	15.00	75.0
PAH100S48-5	5.0	3.0 - 5.75	20.00	100.0
PAH150S48-5	5.0	3.0 - 5.75	30.00	150.0
PAH50S48-12	12.0	7.2 - 13.2	4.20	50.4
PAH75S48-12	12.0	7.2 - 13.2	6.30	75.6
PAH100S48-12	12.0	7.2 - 13.2	8.40	100.8
PAH150S48-12	12.0	7.2 - 13.2	12.50	150.0
PAH200S48-12	12.0	7.2 - 13.2	16.70	200.4
PAH50S48-15	15.0	9.0 - 16.5	3.40	51.0
PAH75S48-15	15.0	9.0 - 16.5	5.00	75.0
PAH100S48-15	15.0	9.0 - 16.5	6.70	100.5
PAH150S48-15	15.0	9.0 - 16.5	10.00	150.0
PAH200S48-15	15.0	9.0 - 16.5	13.40	201.0
PAH50S48-24	24.0	14.4 - 26.4	2.10	50.4
PAH75S48-24	24.0	14.4 - 26.4	3.20	76.8
PAH100S48-24	24.0	14.4 - 26.4	4.20	100.8
PAH150S48-24	24.0	14.4 - 26.4	6.30	151.2
PAH200S48-24	24.0	14.4 - 26.4	8.40	201.6
PAH50S48-28	28.0	16.8 - 30.8	1.80	50.4
PAH75S48-28	28.0	16.8 - 30.8	2.70	75.6
PAH100S48-28	28.0	16.8 - 30.8	3.60	100.8
PAH150S48-28	28.0	16.8 - 30.8	5.40	151.2
PAH200S48-28	28.0	16.8 - 30.8	7.20	201.6
PAH150S48-48	48.0	38.4 - 57.6	3.20	153.6

Options

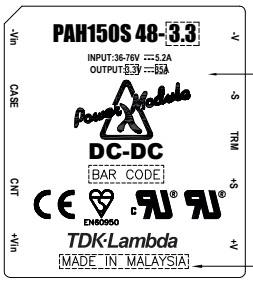
Suffix	ON/OFF Control	Overvoltage
-	Negative	Manual Reset
/P	Positive	Manual Reset
/V*	Negative	Auto Reset
/PV	Positive	Auto Reset

Note: * Standard US Stock Item.

Outline Drawing PAH150S



NAME PLATE :



NOTE :

1. MODEL NAME, INPUT VOLTAGE RANGE, MAXIMUM INPUT CURRENT, NOMINAL OUTPUT VOLTAGE AND MAXIMUM OUTPUT CURRENT ARE SHOWN HERE IN ACCORDANCE WITH THE SPECIFICATIONS.
2. COUNTRY OF MANUFACTURE WILL BE SHOWN HERE.
3. M3 TAPPED HOLES (4) FOR CUSTOMER CHASSIS MOUNTING.
4. INPUT AND OUTPUT TERMINAL : 2−ø2 (+V, −V)
   7−ø1 (OTHER PINS)
5. UNLESS OTHERWISE SPECIFIED DIMENSIONAL TOLERANCE : ±0.25

Pinout

Pin Description	Function
-Vin	Negative Input Terminal
+Vin	Positive Input Terminal
Case	Baseplate Terminal
CNT	On / Off Control terminal
+V	Positive Output Terminal
-V	Negative Output Terminal
TRIM	Output adjustment Trim pin
+S	Positive Remote sense
-S	Negative Remote sense

- 12V output for driving non-isolated converters
- Safety Approved
- Operation at +100°C baseplate
- Wide Adjustable Output Range
- Industry Standard Half Brick Package

Key Market Segments & Applications

Base Station Power Amplifiers
Bus converters for Distributed Power Architectures

PAH300/450 Series

300W to 450W 24V & 48V Input Half Brick DC-DC Converters

PAH Features and Benefits

Features	Benefits
• Wide adjustment range	• Reduces need for custom modules
• Compact size	• Replaces 3/4 or Full Brick Power Modules
• ASIC Design	• Reduced component count, increased MTBF
• 24V & 48V inputs	• Suitable for remote & central office applications

Specifications

ITEM / MODELS		PAH300S, 350S, 450S		
Nominal Output Voltage	VDC	12V	28V	48V
Input Voltage range	VDC	18-36 or 36-76		
Input Current (Max)	A	8.24-17.4A (model dependant)		
Output Voltage Adjustment	VDC	7.2 - 13.2	16.8 - 33	28.8 - 57.6(5)
Ripple & Noise (max) (pk to pk)	mV	200	280(1)	480
Line Regulation (max)	mV	24	56	96
Load Regulation (max)	mV	24	56	96
Overload Protection	%	105 - 140%, constant current with auto recovery		
Overvoltage Protection (3)	%	115-135%	125-140%(2)	125-145%(6)
Remote Sense	-	Yes		
Remote On/Off (See options)	-	Standard; Low = ON, Open = OFF /P option; Low = OFF, Open = ON		
Temperature (operating)	°C	-40°C to +100°C baseplate, full power(4)		
Temperature (storage)	°C	-40°C to +100°C		
Temperature Coefficient	-	0.02%/°C		
Humidity (operating)	-	5 - 95% RH Non condensing		
Humidity (storage)	-	5 - 95% RH Non condensing		
Cooling	-	Conduction (See Installation Manual for heatsink selection)		
Isolation Voltage	VDC	1500VDC Input to output & baseplate, 500VDC Output to baseplate		
Vibration	-	Non Operating, 10-55Hz (sweep for 1 min.)		
Amplitude	-	0.825mm constant (Max 49 m/s²) X,Y,Z 1 hour each		
Shock	-	196.1m/s²		
Safety Agency Approvals	-	UL60950-1, CSA60950-1, EN60950-1, CE LVD (48V input models only)		
Weight (Typ)	g	90/100		
Size (WxHxD)	mm	61x12.7x57.9 See outline drawing		
Warranty	yrs	2		

Note: See Installation Manual for full details, test methods of parameters and application notes

(1) 240mV for PAH300
(2) 125-145% for PAH450S48-28
(3) Manual reset
(4) PAH350S24-28 &-48 derate linearly to 85% load from 90°C to 100°C
(5) 28.8-52.8 PAH350S24-48
(6) 115-140% PAH350S24-48

Model Selector

Model	Input Voltage (V)	Output Voltage (V)	Max. Curr. (A)	Max. Output Power (W)	Efficiency Typ. (%)
PAH300S24-12	18 - 36	12	25	300	87
PAH300S48-12	36 - 76	12	25	300	90
PAH350S48-12	36 - 76	12	29.2	350	89
PAH300S24-28	18 - 36	28	11	308	88
PAH350S24-28	18 - 36	28	12.5	350	88
PAH350S24-48	18 - 36	48	7.3	350	87
PAH300S48-28	36 - 76	28	11	308	90
PAH350S48-28	36 - 76	28	12.5	350	89
PAH450S48-28	36 - 76	28	16	448	92
PAH450S48-48	36 - 76	48	9.4	451	92

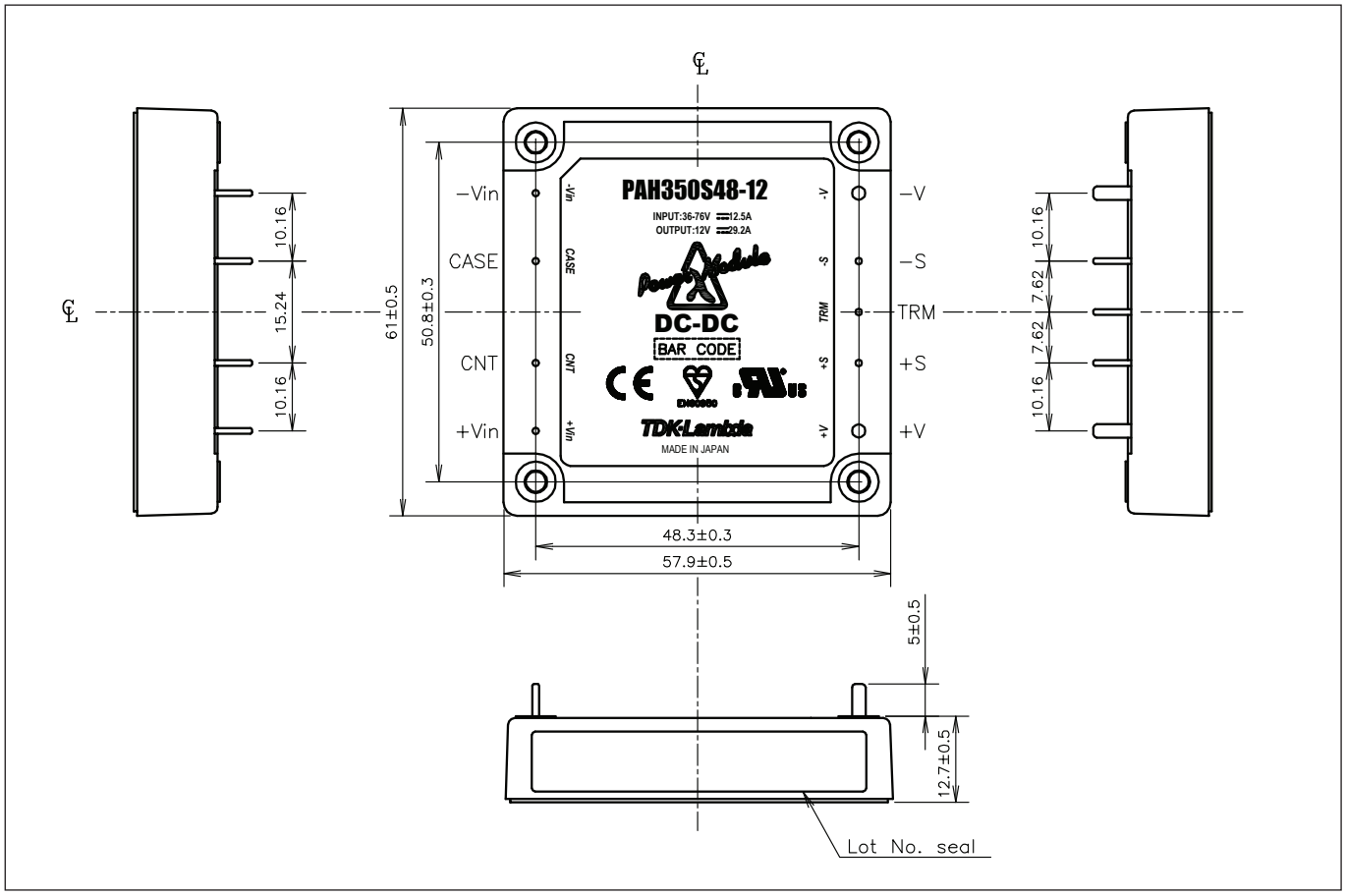
Pinout

Pin Description	Function
-Vin	Negative Input Terminal
+Vin	Positive Input Terminal
CNT	On / Off Control terminal
+V	Positive Output Terminal
-V	Negative Output Terminal
TRIM	Output adjustment Trim pin
+S	Positive Remote sense
-S	Negative Remote sense

Options

Suffix	Description
-	M3 Tapped inserts for mounting
/T	M3 clearance inserts for mounting
/P	Positive logic remote On/Off

Outline Drawing PAH300/450 Series



Innovating Reliable Power TDK·Lambda

- Includes 12V output models for driving non-isolated converters
- Up to 80A output current (48V models)
- Full power at +100°C baseplate
- Opto Isolated Remote On / Off
- Wide Adjustable Output Range

PAF500F PAF600F

24V & 48V Input Full Brick DC-DC Converters

Key Market Segments & Applications

Central Office:	ATM, Sonet, DSL, ISDN, Frame relay
Broadband:	Switching Equipment, Routers
Wireless/Cellular:	Micro Cells, Pico Cells
Remote Electronics:	Fixed Local Loop, Fibre Optic Transmission, Microwave Transmission, Wireless Local Loop
Customer Premise:	PBX, PABX, Datacomm, Voice Systems, Video Conferencing

PAF500F & PAF600F Features and Benefits

Features	Benefits
• Wide adjustment range	• Reduces need for custom modules
• Parallel Pin	• Modules can be connected together for higher current
• ASIC Design	• Reduced component count, increased MTBF
• 24V and 48V Inputs	• Suitable for Industrial and Telecom Applications

Specifications

ITEMS \ MODEL		PAF500F48-3.3	PAF500F48-5	PAF500F24-12 PAF500F48-12	PAF500F24-28 PAF500F48-28	PAF600F24-12 PAF600F48-12	PAF600F24-28 PAF600F48-28
Nominal Output Voltage	VDC	3.3	5	12	28	12	28
Output Current (Max)	A	80	80	42	18	50	21.5
Max Output Power	W	264	400	504	504	600	602
Efficiency (Typ)	%	78	83	89	90	89-90	89-90
Input Voltage range	VDC	36-76		19-36 or 36-76	18-36 or 36-76	20-36 / 36-76	19-36 / 36-76
Input Current (Typ) (24V/48V)	A	7.3	10.4	24 / 12.2	23.8 / 12.1	28.9 / 14.2	28.9 / 14.1
Output Voltage Accuracy	%	±1					
Output Voltage Adjustment	VDC	2 - 4	3 - 6	7.2 - 13.2	16.8 - 30.8	7.2 - 13.2	16.8 - 30.8
Max Ripple & Noise	mV	100	100	200	280	200	280
Max Line Regulation	mV	10	10	24	56	24	56
Max Load Regulation	mV	10	10	24	56	24	56
Overcurrent Protection	%	105 - 140%					
Overvoltage Protection	%	130-160	125-145	115-135	115-135	115-135	115-135
Signals & Control	-	Remote sense, remote On/Off, Parallel Pin, DC Good (12, 28V models) Adjustable OVP (3.3, 5V models), 7-10V Auxiliary voltage				Remote sense, remote On/Off, Parallel Pin DC Good, 7-10V Auxiliary voltage	
Operating Temperature	-	-40°C to +100°C baseplate					
Cooling	-	Conduction (See Installation Manual for heatsink selection)					
Isolation Voltage	VDC	Input - Baseplate 1500V, Input - Output 1500V, Output-Baseplate 500V					
Shock	-	196.1m/s^2					
Vibration	-	Non Operating, 10-55Hz (sweep for 1 min.)					
	-	Amplitude 0.825mm constant (Max 49m/s^2) X, Y, Z 1 hour each					
Safety Agency Approvals	-	UL60950-1, CSA60950-1, EN60950-1, CE LVD					
Weight (Typ)	g	250					
Size (WxHxD)	mm	61 x 12.7 x 116.8 See outline drawing					
Warranty	yrs	2					

Notes: See Installation Manual for full details, test methods of parameters and application notes.

Pinout

Pin Description	Function
-Vin	Negative Input Terminal
+Vin	Positive Input Terminal
- ON/OFF	Remote On/Off negative terminal
+ON/OFF	Remote On/Off positive terminal
+V	Positive Output Terminal
-V	Negative Output Terminal
AUX	7-10V Aux voltage
IOG/OVP	DC Good / OVP adjustment
PC	Parallel control connection
TRIM	Output adjustment Trim pin
+S	Positive Remote sense
-S	Negative Remore sense

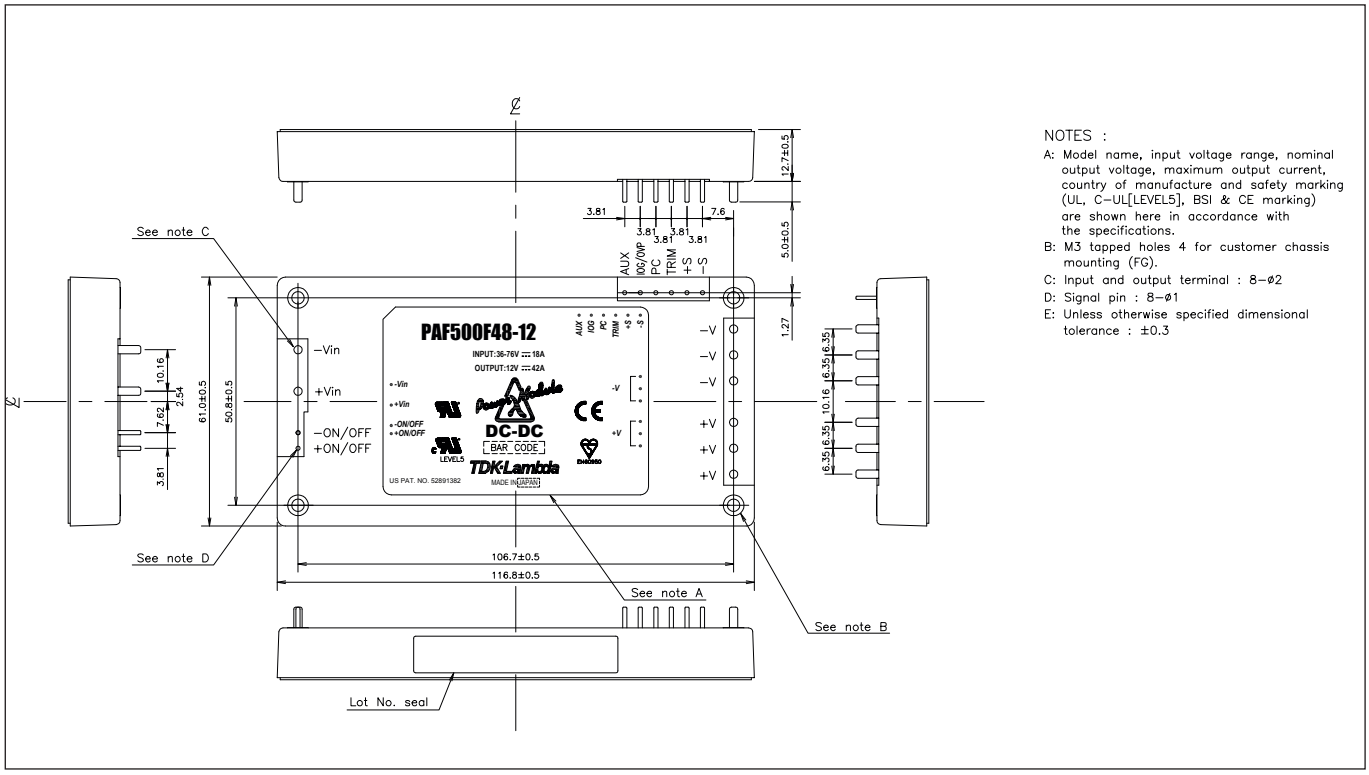
Options

Suffix	Description
Blank	
/T	No thread in mounting holes

Heatsink Table

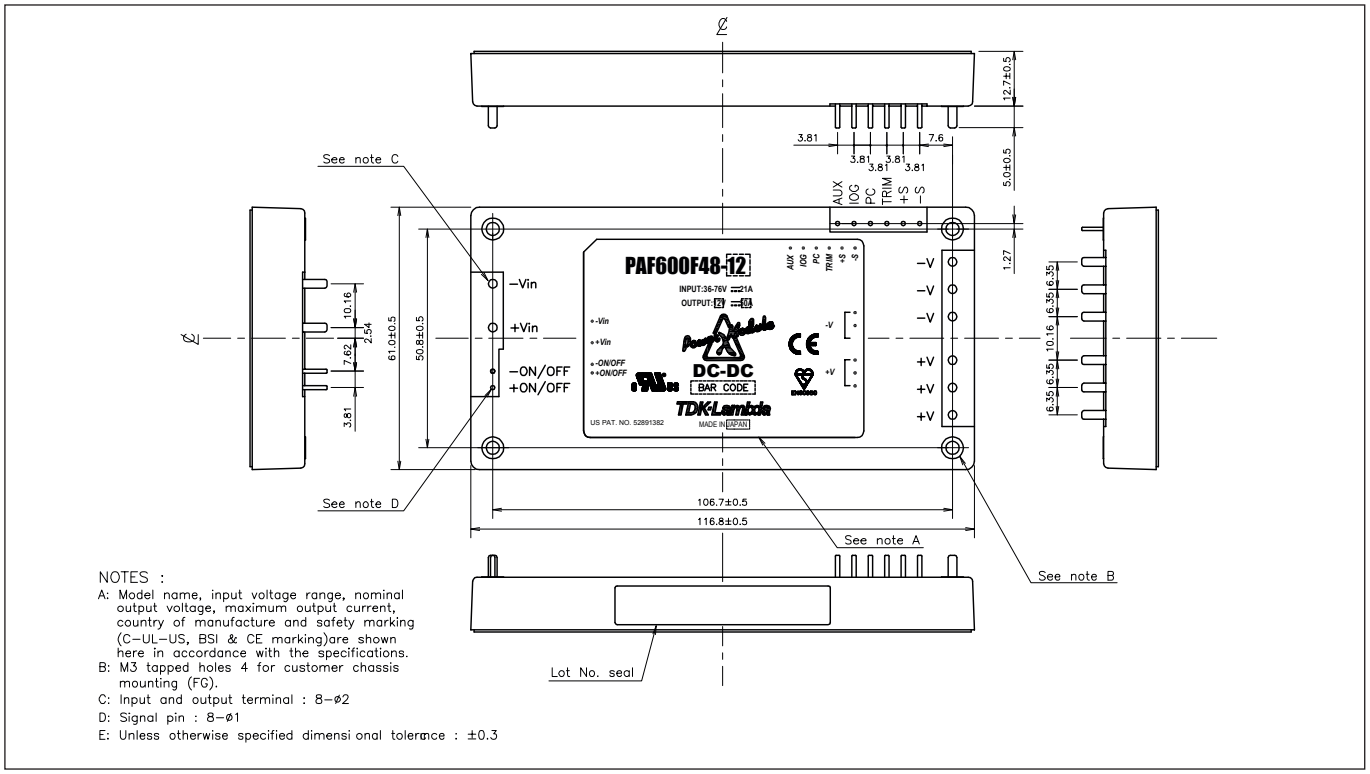
Heatsink	Size (mm)	Thermal Resistance
HAF-10L	116.8 x 25.4 x 61	2.2°C/W
HAF-15L	116.8 x 38.1 x 61	1.9°C/W
HAF-15T	116.8 x 38.1 x 61	1.5°C/W

Outline Drawing PAF500F

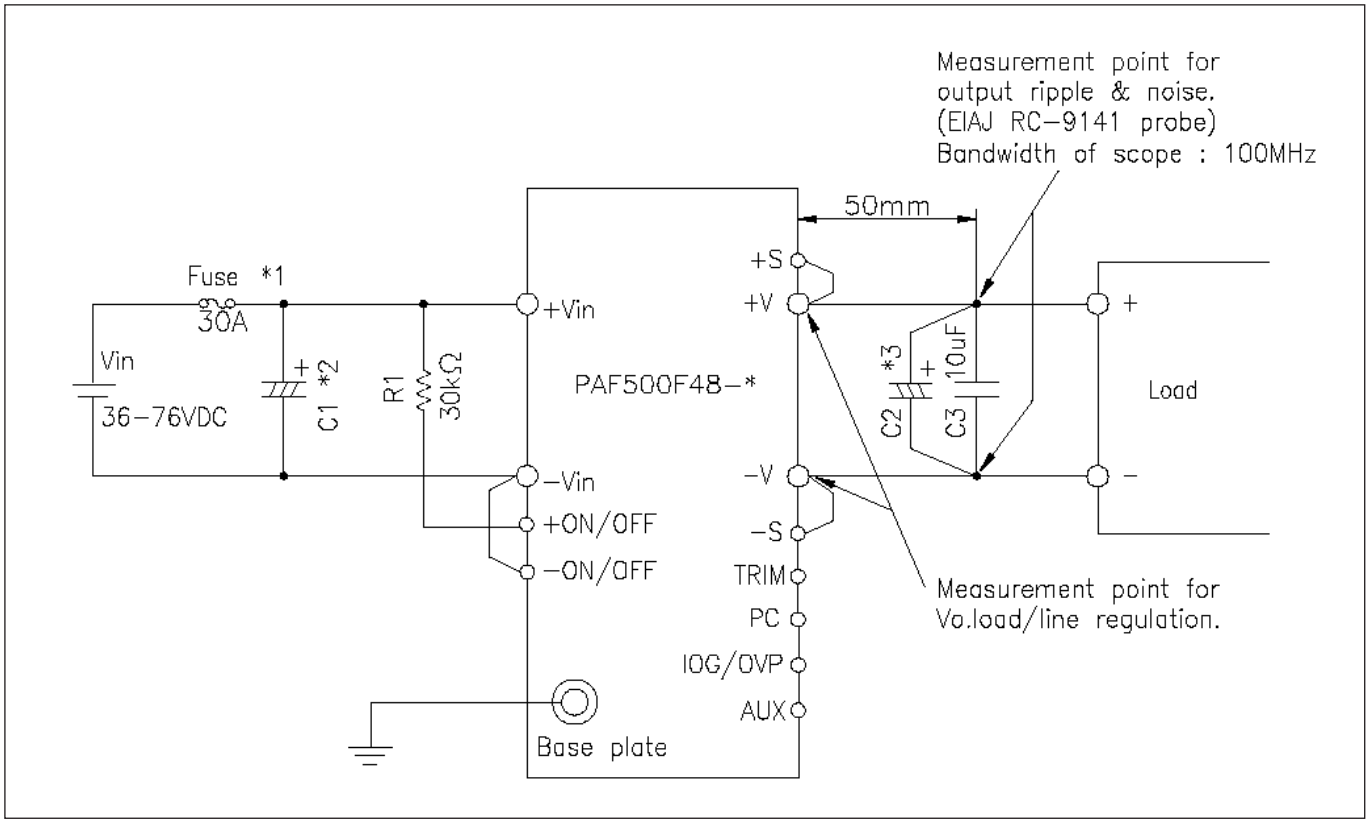


NOTES :
A: Model name, input voltage range, nominal output voltage, maximum output current, country of manufacture and safety marking (UL, C-UL[LEVEL5], BSI & CE marking) are shown here in accordance with the specifications.
B: M3 tapped holes 4 for customer chassis mounting (FG).
C: Input and output terminal : 8-ø2
D: Signal pin : 8-ø1
E: Unless otherwise specified dimensional tolerance : ±0.3

Outline Drawing PAF600F



Connection Example



- Output Voltages from 7.2V to 57V
- Current Share
- Operation to +100°C Baseplate
- Wide Adjustable Output Range

Key Market Segments & Applications

Servers & Rail Systems
High End Computers
Customer Power Supplies

PAF450F280 & PAF600F280

200V to 400VDC Input Full Brick
DC-DC Converters

PAF450F280 & PAF600F280 Features and Benefits

Features	Benefits
• Wide adjustment range	• Reduces need for custom modules
• Parallel Pin	• Modules can be connected togetherr for higher current
• High efficiency - up to 91%	• Reduces Heat Loss

Specifications

ITEMS	MODEL	PAF600F280-12 /PAF450F280-12	PAF600F280-24 /PAF450F280-24	PAF600F280-28 /PAF450F280-28	PAF600F280-48 /PAF450F280-48
Nominal Output Voltage	VDC	12	24	28	48
Output Current (Max)	A	50/38	25/19	21.5/16.5	12.5/9.5
Max Output Power	W	600/456	600/456	602/462	600/456
Efficiency (Typ)	%	89/90	91	91	91
Input Voltage Range	VDC	200-400VDC			
Output Voltage Accuracy	%	±1			
Output Voltage Adjustment	VDC	7.2 - 14.4	14.4 - 28.8	16.8 - 33.6	28.8 - 57.6
Max Ripple & Noise	mV	120	240	280	480
Max Line Regulation	mV	48	56	56	96
Max Load Regulation	mV	48	56	56	96
Temperature Coefficient	°C	0.02%/°C			
Overcurrent Protection	%	105 - 140%			
Overvoltage Protection	%	125 - 145%			
Signals & Control	-	Remote sense, remote On/Off, Parallel Pin, Inverter Good, 10-14V Auxiliary voltage			
Baseplate Temperature	-	-40°C to +100°C Baseplate: (See derating chart)			
Humidity (non condensing)	-	5 - 95% RH Operating, 5 - 95% RH Non Operating			
Cooling	-	Conduction (See Installation Manual for heatsink selection)			
Isolation Voltage	-	Input to Baseplate: 2500VAC (20mA); Input to Output 3000VAC for 1 min.; Output to Baseplate: 500VDC for 1 min			
Shock	-	196.1m/s^2			
Vibration	-	Non Operating, 10-55Hz (sweep for 1 min.) Amplitude 0.825mm constant (Max 49 m/s^2) X,Y,Z 1 hour each			
Safety Agency Approvals	-	UL60950-1, CSA60950-1, EN60950-1, CE LVD			
Weight (Typ)	g	200			
Size (WxHxD)	mm	61 x 12.7 x 116.8			
Warranty	yr	2			

Notes: See Installation Manual for full details, test methods of parameters and application notes.

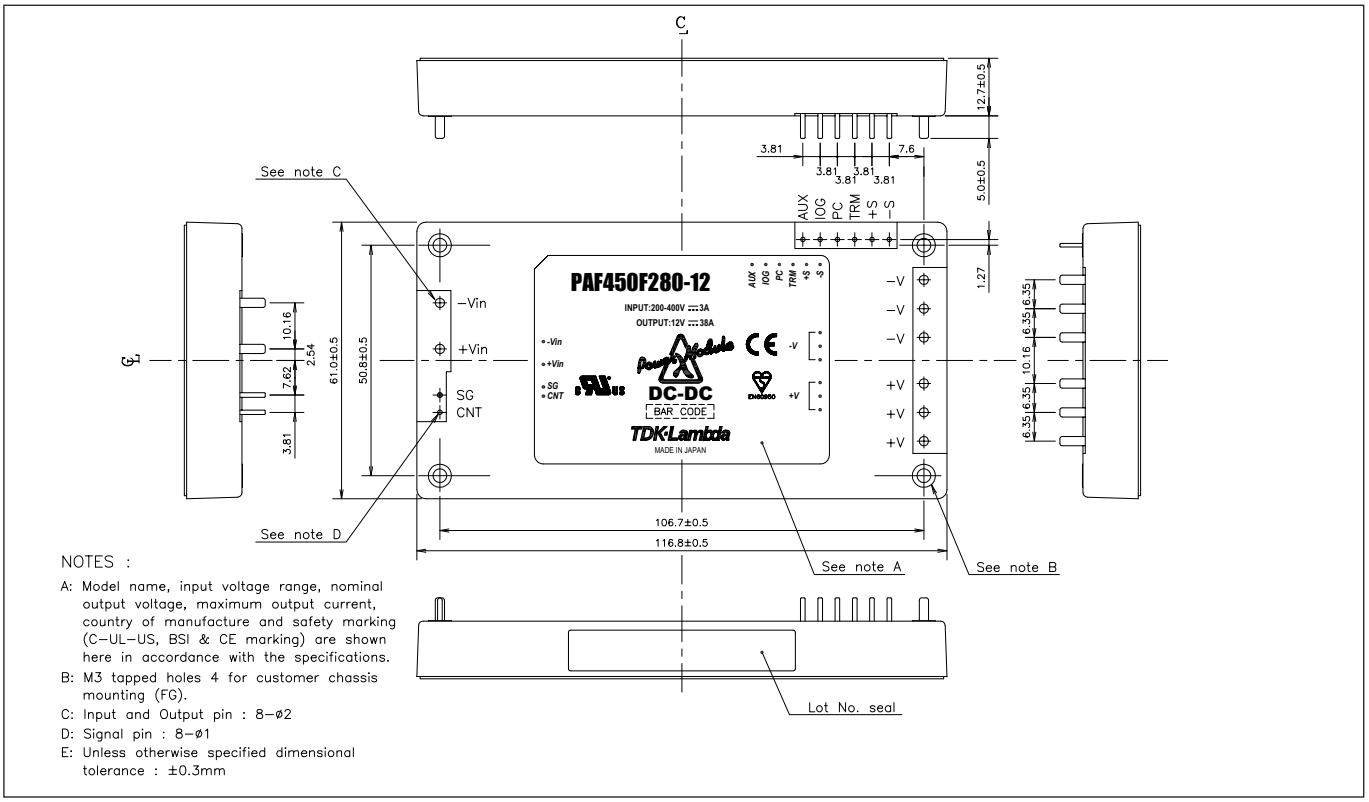
Pinout

Pin Description	Function
-Vin	Negative Input Terminal
+Vin	Positive Input Terminal
CNT	Remote On/Off Negative Terminal
+V	Positive Output Terminal
-V	Negative Output Terminal
AUX	10-14V Aux Voltage
PC	Parallel Control Connection
TRIM	Output Adjustment Trim Pin
+S	Positive Remote Sense
-S	Negative Remote Sense
SG	Remote ON/OFF Return

Options

Suffix	Description
Blank	M3 tapped mounting inserts (4)
/T	3.3mm non-threaded inserts (4)

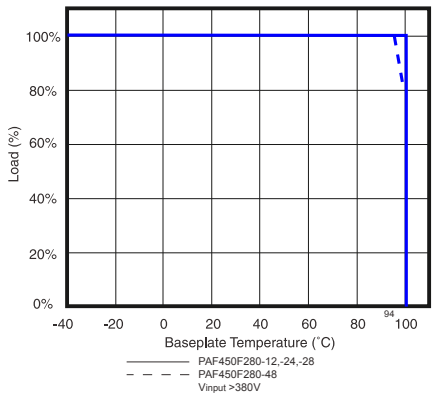
Outline Drawing PAF450F280



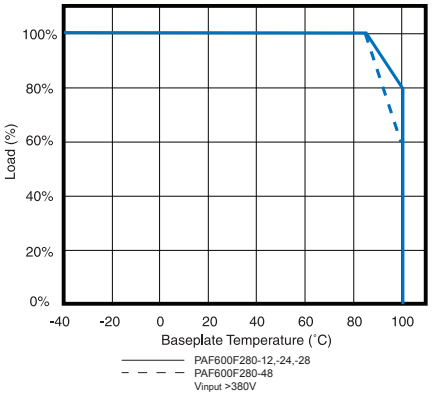
NOTES :

A: Model name, input voltage range, nominal output voltage, maximum output current, country of manufacture and safety marking (C-UL-US, BSI & CE marking) are shown here in accordance with the specifications.
B: M3 tapped holes 4 for customer chassis mounting (FG).
C: Input and Output pin : 8-ø2
D: Signal pin : 8-ø1
E: Unless otherwise specified dimensional tolerance : ±0.3mm

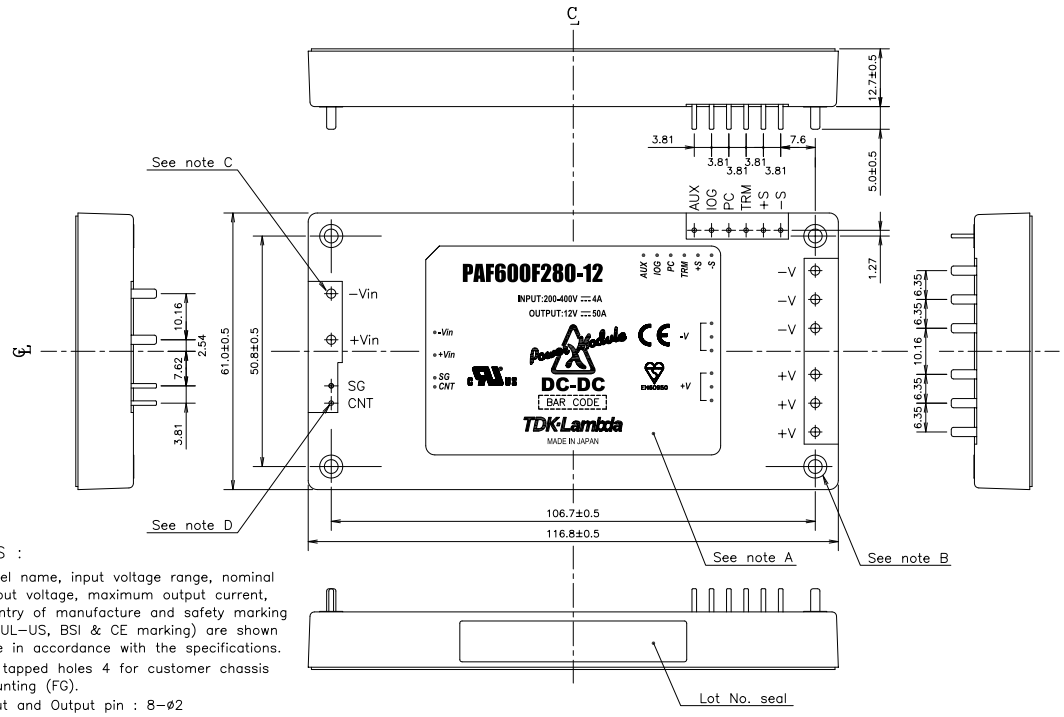
Derating Curve PAF450F280



Derating Curve PAF600F280



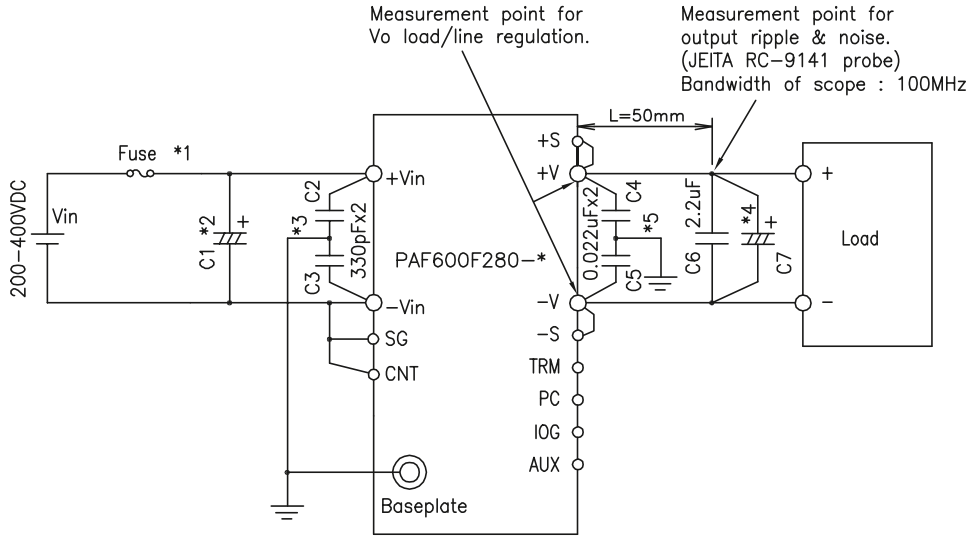
Outline Drawing PAF600F280



NOTES :

A: Model name, input voltage range, nominal output voltage, maximum output current, country of manufacture and safety marking (C–UL–US, BSI & CE marking) are shown here in accordance with the specifications.
B: M3 tapped holes 4 for customer chassis mounting (FG).
C: Input and Output pin : 8–ø2
D: Signal pin : 8–ø1
E: Unless otherwise specified dimensional tolerance : ±0.3mm

Connection Example



PAF700F Series

700W 48V Input
Full Brick DC-DC Converters

- 12V output for driving non-isolated converters
- 12V, 28V output for BTS amps
- Full power at +85°C baseplate, operation to +100°C
- Opto Isolated Remote On / Off
- Wide Adjustable Output Range

Key Market Segments & Applications

Central Office:	ATM, Sonet, DSL, ISDN, Frame Relay
Broadband:	Switching Equipment, Routers
Wireless/Cellular:	Micro Cells (larger in size/10 sq. mi.) Pico Cells (smaller in size/1 to 2 sq. mi.)
Remote Electronics:	Fixed Local Loop, Fibre Optic Transmission, Microwave Transmission, Wireless Local Loop

Base Station Power Amplifiers
Intermediate Bus Architectures

PAF700F Features and Benefits

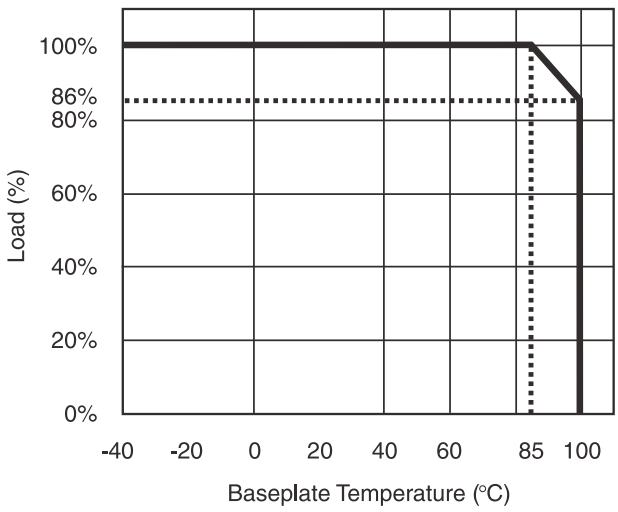
Features	Benefits
• Wide adjustment range	• Reduces need for custom modules
• Parallel Pin	• Modules can be connected together for higher current
• ASIC Design	• Reduced component count, increased MTBF

Specifications

ITEMS / MODEL		PAF700F48-12	PAF700F48-28
Nominal Output Voltage	VDC	12	28
Output Current (Max)	A	58.5	25
Output Power (Max)	W	702	700
Efficiency (Typ)	%	90%	91%
Input Voltage Range	VDC	36-76	
Input Current (Typ)	A	16.5	16.4
Output Voltage Accuracy	%	±1	
Output Voltage Adjustment	VDC	7.2 - 13.8	16.8 - 32.2
Ripple & Noise (Max)	mV	200	280
Line Regulation (Max)	mV	24	56
Load Regulation (Max)	mV	24	56
Temperature Coefficient	-	0.02%/°C	
Overcurrent Protection	%	105 - 140%	
Overvoltage Protection	%	120 - 135%	
Parallel Operation		Yes	
Series Operation		Yes	
Signals & Control	-	Remote sense, remote On/Off, Parallel Pin, DC Good, 7-10V Auxiliary voltage	
Operating Temperature	-	-40°C to +100°C baseplate	
Humidity (operating)	-	20 - 95% RH Non condensing	
Humidity (storage)	-	10 - 95% RH Non condensing	
Cooling	-	Conduction (See Installation Manual for heatsink selection)	
Isolation Voltage	VDC	Input - Baseplate 1500V, Input - Output 1500V, Output-Baseplate 500V (for 1 min.)	
Shock	-	196.1m/s^2	
Vibration	-	Non Operating, 10-55Hz (sweep for 1 min.) Amplitude 0.825mm constant (Max 49 m/s^2) X,Y,Z 1 hour each	
Safety Agency Approvals	-	UL60950-1, CSAC22.2 No. 60950-1, EN60950, CE LVD	
Weight (Typ)	g	200	
Size (WxHxD)	mm (in)	61 x 12.7 x 116.8 (2.4 x 0.5 x 4.6) See outline drawing	
Warranty	yrs	2	

Notes: See Installation Manual for full details, test methods of parameters and application notes.

Derating Curve



Part Number Scheme

Full Brick	Max Power Watts	Full Function	Nominal Input Voltage	Output Voltage	Option Suffix
PAF	700	F	48	12 or 28	Blank = M3 Tapped inserts T = 3.3mm Non-threaded through hole

Connection Example

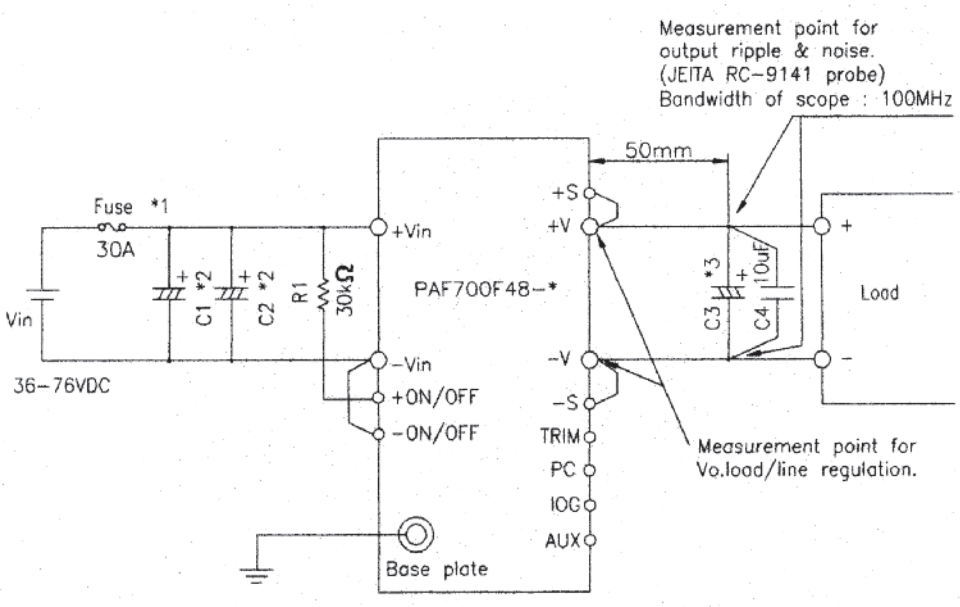
Note

1 Use external fuse of fast blow type, for each unit

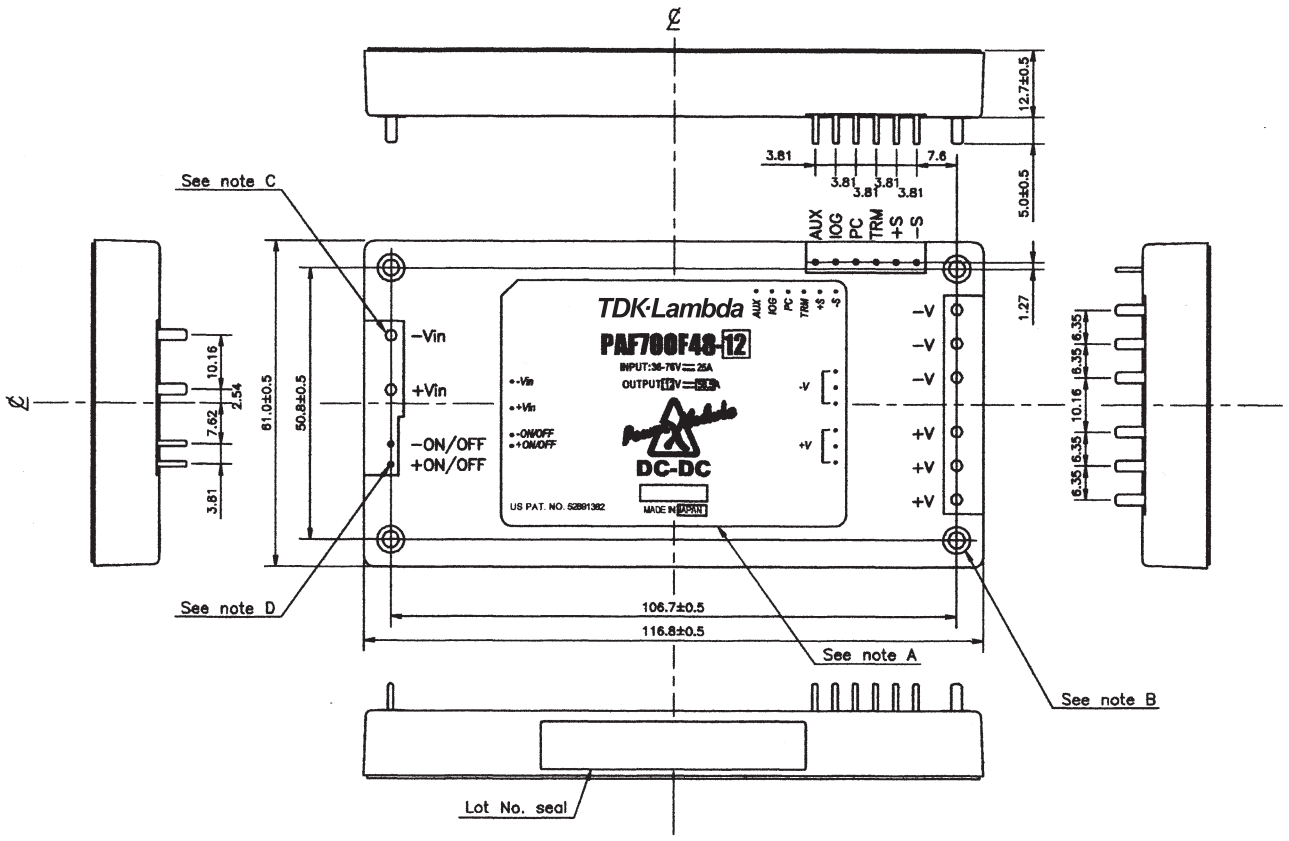
2 Put input capacitor, C1 and C2, greater than 220uf for each. If the impedance of input line is high, C1 and C2 capacitance must be greater than above.

3 Put output capacitor, C3 (12v: more than 470uF,28V: greater than 220uF). If the ambient temperature is less than -20C, use 4 pieces of the recommended capacitor above.

4 Refer to instruction manual for further details.



Outline Drawing PAF700F



Note

A: Model name, input voltage range, nominal output voltage, maximum output current, country of manufacture are shown here in accordance with the specifications

B: M3 tapped holes for customer chassis mounting (FG)

C: Input and output pin: 8-02

D: Signal pin : 8-01

E: Unless otherwise specified dimensional tolerance ± 0.3mm

Pinout

Pin Description	Function
-Vin	Negative Input Terminal
+Vin	Positive Input Terminal
- ON/OFF	Remote On/Off Negative Terminal
+ON/OFF	Remote On/Off Positive Terminal
+V	Positive Output Terminal
-V	Negative Output Terminal
AUX	7-10V Aux Voltage
IOG	DC Good
PC	Parallel Control Connection
TRIM	Output Adjustment Trim Pin
+S	Positive Remote Sense
-S	Negative Remote Sense

- High Density
- Wide Range Input
- Output adjustment Capability
- Remote On/Off
- Fixed Switching Frequency
- International Safety Approvals

Key Market Segments & Applications

Telecom
Custom Power Supplies
Point of Load

PH-S Series

Simple Function 50W to 600W
DC-DC Converters

PH-S Features and Benefits

Features	Benefits
• High density	• Smaller package size
• Low component count	• High reliability Demonstrated 5 million hours MTBF
• Fixed operating frequency	• Easier system filtering
• Variety of input voltages	• Systems can operate from different input voltages

Specifications

ITEMS		3.3V	5V	12V	15V	24V	28V	48V
Input range	VDC	24V nom: 18-36, 48V nom: 36-76V, 110V nom: 82-185V, 280V nom: 200-400V						
Output Voltage Adj. Range 300-600W	VDC	2.97-3.96	4.5-6	10.8-13.2	13.5-16.5	21.6-26.4	25.2-30.8	43.2-57.8
Output Voltage Adj. Range	VDC	2.97-3.63	4.5-5.5					43.2-52.8
Line Regulation	-	0.4% or 20mV (whichever is greater) over entire input range with constant load						
Load Regulation	-	0.8% or 40mV (whichever is greater) from no load to full load with constant input line						
Ripple and Noise	mV	100		150		240	280	480
Series Operation	-	Possible - Refer to installation manual						
Over Voltage Protection (2)	%	150 - 180	125 - 145					
Over Current Protection	%	Approximately 105 - 150, automatic recovery						
Remote On/Off	-	Short = ON, Open = OFF						
Remote Sensing	-	PH100S, PH150S, PH300S, PH600S models						
Parallel operation	-	PH300S & PH600S only: Requires external circuitry						
Inverter Good signal	-	PH300S & PH600S only: Signal available for status of inverter						
Thermal Protection	-	Internal sensing, self resetting						
Cooling	-	Conduction or forced air. See application notes for cooling and heatsink selection						
Operating Temperature Range	°C	Baseplate temperature -20°C to +85°C (+100°C on PH300 & PH600)						
	°C	-40°C start up versions available (1)						
Storage Temperature	°C	-40°C to +85°C (+100°C on PH300 & PH600)						
Temperature Coefficient	-	0.02%/°C						
Isolation	-	Input to output: 3000VAC, Input to Baseplate: 2500VAC						
Isolation Resistance	Ω	Output to Baseplate 100mΩ at 500VDC and 70%RH						
Safety Agency Approval	-	UL60950-1, CSA22.2 No.60950-1, EN60950 and CE Mark.						
Warranty	yrs	2						

Note: See Installation Manual for full details, test methods of parameters and application notes
(1) Please consult sales
(2) 50W: 165 - 240%, 300W - 600W: 140 - 190%

Model Selector

Nominal Output Voltage (V)	Output Current (A)	Output Power (W)	24V input	48V input	110V input	280V input
3.3	10.0	33.0	PH50S24-3.3	PH50S48-3.3	-	PH50S280-3.3
3.3	15.0	49.5	-	PH75S48-3.3	-	PH75S280-3.3
3.3	20.0	66.0	-	PH100S48-3.3	-	PH100S280-3.3
3.3	30.0	99.0	-	PH150S48-3.3	-	PH150S280-3.3
3.3	50.0	165.0	-	-	-	PH300S280-3.3
3.3	100.0	330.0	-	-	-	PH600S280-3.3
5.0	10.0	50.0	PH50S24-5	PH50S48-5	PH50S110-5	PH50S280-5
5.0	15.0	75.0	-	PH75S48-5	PH75S110-5	PH75S280-5
5.0	20.0	100.0	-	PH100S48-5	-	PH100S280-5
5.0	30.0	150.0	-	PH150S48-5	PH150S110-5	PH150S280-5
5.0	50.0	250.0	-	-	-	PH300S280-5
5.0	100.0	500.0	-	-	-	PH600S280-5
12.0	4.2	50.0	PH50S24-12	PH50S48-12	PH50S110-12	PH50S280-12
12.0	6.3	75.0	-	PH75S48-12	PH75S110-12	PH75S280-12
12.0	8.4	100.0	-	PH100S48-12	-	PH100S280-12
12.0	12.5	150.0	-	PH150S48-12	PH150S110-12	PH150S280-12
12.0	25.0	300.0	-	-	-	PH300S280-12
12.0	50.0	600.0	-	-	-	PH600S280-12
15.0	3.4	50.0	PH50S24-15	PH50S48-15	PH50S110-15	PH50S280-15
15.0	5.0	75.0	-	PH75S48-15	PH75S110-15	PH75S280-15
15.0	6.7	100.0	-	PH100S48-15	-	PH100S280-15
15.0	10.0	150.0	-	PH150S48-15	PH150S110-15	PH150S280-15
15.0	20.0	300.0	-	-	-	PH300S280-15
15.0	40.0	600.0	-	-	-	PH600S280-15
24.0	2.1	50.0	PH50S24-24	PH50S48-24	PH50S110-24	PH50S280-24
24.0	3.2	75.0	-	PH75S48-24	PH75S110-24	PH75S280-24
24.0	4.2	100.0	-	PH100S48-24	-	PH100S280-24
24.0	6.3	150.0	-	PH150S48-24	PH150S110-24	PH150S280-24
24.0	12.5	300.0	-	-	-	PH300S280-24
24.0	25.0	600.0	-	-	-	PH600S280-24
28.0	1.8	50.0	PH50S24-28	PH50S48-28	PH50S110-28	PH50S280-28
28.0	2.7	75.0	-	PH75S48-28	PH75S110-28	PH75S280-28
28.0	3.6	100.0	-	PH100S48-28	-	PH100S280-28
28.0	5.4	150.0	-	PH150S48-28	PH150S110-28	PH150S280-28
28.0	10.8	302.0	-	-	-	PH300S280-28
28.0	21.5	602.0	-	-	-	PH600S280-28
48.0	6.3	302.0	-	-	-	PH300S280-48
48.0	12.5	600.0	-	-	-	PH600S280-48

PIN Assignments

Pin Description	Function
-Vin	Negative Input Terminal
+Vin	Positive Input Terminal
+S	Positive Remote sense
-S	Negative Remote sense
+V	Positive Output Terminal
-V	Negative Output Terminal
IOG	Inverter Good Signal
TRIM	Output adjustment trim pin
CNT	On/Off Control Terminal
CS	Current Monitor Signal

For full data and drawings please visit www.emea.tdk-lambda.com/ph

- High Density
- Wide Range Input
- Wide output adjustment capability
- Remote On/Off
- Fixed Switching Frequency
- International Safety Approvals
- Parallel Operation

Key Market Segments & Applications

Telecom
Custom Power Supplies
N+1 redundant systems
Scalable systems
Point of Load

PH-F Series

Full Function 50W to 300W DC-DC Converters

PH-F Features and Benefits

Features	Benefits
• Low component count	• High reliability demonstrated 5 million hours MTBF
• Wide output adjustment	• Avoids the need for custom modules
• Signals to support N+1 redundancy	• Ease of use in redundant configurations
• Variety of input voltages	• Systems can operate from different input voltages

Specifications

ITEMS		2V	3.3V	5V	12V	15V	24V	28V
Input range	VDC	24V nom: 18-36, 48V nom: 36-76V, 110V nom: 82-185V, 280V nom: 200-400V						
Output Voltage Adj. Range	VDC	1.6~2.4	2.64~3.96	2~6	4.8~14.4	6~18	9.6~28.8	11.2~33.6
Line Regulation	-	0.4% or 20mV (whichever is greater) over entire input range with constant load						
Load Regulation	-	0.8% or 40mV (whichever is greater) from no load to full load with constant input line						
Ripple and Noise	mV	100			150		240	280
Series Operation	-	Possible - Refer to installation manual						
Over Voltage Protection	-	150 - 180%		125 - 145%				
Overload Protection	-	Approximately 105 - 140%, automatic recovery						
Remote On/Off	-	Short = ON, Open = OFF						
Remote Sensing	-	Yes						
Parallel operation	-	Using current share pin (PC). Will share within 5%, see app. notes for connection details						
Inverter Good signal	-	Signal available for status of inverter						
Auxiliary Bias Supply	-	7-10V 10mA auxiliary voltage to supply power to interface circuits (AUX pin)						
Thermal Protection	-	Internal sensing, self resetting						
Cooling	-	Conduction or forced air. See application notes for cooling and heatsink selection						
Operating Temperature Range	°C	Baseplate temperature -20°C to +85°C (-40°C start up versions available (2))						
Storage Temperature	°C	-40°C to +85°C						
Temperature Coefficient	-	0.02%/°C						
Isolation	-	Input to output: 3000VAC, Input to Baseplate: 2500VAC(1)						
Isolation Resistance	Ω	Output to Baseplate -100mΩ at 500VDC and 70%RH						
Safety Agency Approval	-	UL60950-1, CSA22.2 No.60950-1, EN60950-1 and CE Mark.						
Warranty	yrs	2						

Note: See Installation Manual for full details, test methods of parameters and application notes
(1) 24V input models input to output: 2kVAC; input to baseplate: 2kVAC
(2) Please consult sales

Model Selector

Nominal Output Voltage (V)	Output Current (A)	Output Power (W)	24V input	48V input	110V input	280V input
2.0	15.0	30	-	PH75F48-2	PH75F110-2	PH75F280-2
2.0	20.0	40	PH100F24-2	-	-	-
2.0	30.0	60	-	PH150F48-2	PH150F110-2	PH150F280-2
2.0	60.0	120	-	PH300F48-2	PH300F110-2	PH300F280-2
3.3	15.0	45	-	PH75F48-3	PH75F110-3	PH75F280-3
3.3	20.0	60	PH100F24-3	-	-	-
3.3	30.0	90	-	PH150F48-3	PH150F110-3	PH150F280-3
3.3	60.0	180	-	PH300F48-3	PH300F110-3	PH300F280-3
5.0	15.0	75	-	PH75F48-5	PH75F110-5	PH75F280-5
5.0	20.0	100	PH100F24-5	-	-	-
5.0	30.0	150	-	PH150F48-5	PH150F110-5	PH150F280-5
5.0	60.0	300	-	PH300F48-5	PH300F110-5	PH300F280-5
12.0	6.3	75	-	PH75F48-12	PH75F110-12	PH75F280-12
12.0	8.4	100	PH100F24-12	-	-	-
12.0	12.5	150	-	PH150F48-12	PH150F110-12	PH150F280-12
12.0	20.0	240	PH300F24-12	-	-	-
12.0	25.0	300	-	PH300F48-12	PH300F110-12	PH300F280-12
15.0	5.0	75	-	PH75F48-15	PH75F110-15	PH75F280-15
15.0	6.7	100	PH100F24-15	-	-	-
15.0	10.0	150	-	PH150F48-15	PH150F110-15	PH150F280-15
15.0	20.0	300	-	PH300F48-15	PH300F110-15	PH300F280-15
24.0	3.2	75	-	PH75F48-24	PH75F110-24	PH75F280-24
24.0	4.2	100	PH100F24-24	-	-	-
24.0	6.3	150	-	PH150F48-24	PH150F110-24	PH150F280-24
24.0	12.6	300		PH300F48-24	PH300F110-24	PH300F280-24
28.0	2.7	50	-	PH75F48-28	PH75F110-28	PH75F280-28
28.0	3.6	100	PH100F24-28	-	-	-
28.0	5.4	150	-	PH150F48-28	PH150F110-28	PH150F280-28
28.0	10.8	300	PH300F24-28	PH300F48-28	PH300F110-28	PH300F280-28

PIN Assignments

Pin Description	Function
-Vin	Negative Input Terminal
+Vin	Positive Input Terminal
+S	Positive Remote sense
-S	Negative Remote sense
+V	Positive Output Terminal
-V	Negative Output Terminal
AUX	Bias voltage output (secondary ref)
IOG	DC Good
TRIM	Output adjustment trim pin
CNT	On / Off Control terminal
SG	Signal (CNT RTN)
PC	Parallel control connection

Options

Suffix	Description
-	M3 Tapped inserts for mounting
/T	M3 clearance inserts for mounting
/P	Positive logic remote On/Off

For full data and drawings please visit www.emea.tdk-lambda.com/ph

Isolated PCB Mount and Surface Mount DC-DC Converters

A comprehensive range of standalone pcb mount dc-dc converters offering output power from 0.7W to 60W, single, dual and triple outputs and a wide choice of input voltages including 4:1 input range options.
Suitable for any OEM equipment.

- Compact Footprint/Low Profile
- Through Hole or SMT Versions
- 5V, 12V, 24V & 48V Inputs
- 3.3 to 30V[1] Single, ±12 to 15V Dual Outputs
- Output Voltage Adjustment
- Input - Output Isolation
- RoHS Compliant
- 5 Year Warranty

CC-E Series

Ultra Compact, 1.5W to 25W Single & Dual DC-DC Converters

Key Market Segments & Applications

Telecommunications

Instrumentation

Datacom

CC-E Features and Benefits

Features	Benefits
• Compact	• Less PCB Area Used
• Self Contained	• Requires No External Components
• Multiple Input Voltage configurations	• Easier System Configuration
• Open Frame (no potting)	• Lighter in Weight, Suitable for Surface Mount (R Version)

Specifications

Nominal Output Voltage	V	**3.3V**	**5V**	**12/15V**	**±12/15 (24/30)[1]**
DC Input	V	5V: 4.5-9.0V, 12V: 9-18V, 24V: 18-36V, 48V: 36-76V			
Efficiency	%	71 to 90% model dependant			
Output Voltage Tolerance	%	1.5-10W: ±3%, 15-25W: ±5%			
Output Adjustment (via trim pin)	V	3.15-3.6V	4.75-6.0V	11.4-15V	22.8 - 30V
Line Regulation	mV	20 (40 CC15; 30 CC25)		40	80
Load Regulation	mV	40 (120 CC15; 200 CC25)		100	600[2]
Temperature Coefficient	%	<± 0.02%/°C			
Preload	-	No preload required			
Output Ripple (typ./max.BW 50MHz)	mV	40/120		30/120	
Overcurrent Protection	-	Output current limiting with automatic recovery, shutdown CC15, 25 type			
Overvoltage Protection	-	No			
Remote On/ Off	-	CC1R5, 3, 6, & 10: RC terminal open, output is OFF; RC terminal to -Vin (0-0.4V), output is ON CC15 & CC25: RC terminal open, output is ON; RC terminal to +Vin, output is OFF			
Operating Temp.- Convection	°C	-40°C to +85°C, derates linearly to 40% load from +50°C to +85°C			
Operating Temp.- Forced Air	°C	-40°C to +85°C with 1m/s air full load			
Storage Temperature	°C	-40°C to +85°C			
Humidity (non Condensing)	-	95% RH max.(maximum wet-bulb temperature: +38°C)			
Isolation Voltage	-	500VAC 1 min. Input to output, input to case, output to case			
Isolation Resistance	Ω	Input to output, input to case, output to case: 50mΩ min. (500VDC)			
Shock	m/s²	980m/s² (100G) 6ms (6 directions, each 3 times)			
Vibration (non Operating)	-	10 to 55Hz (sweep for 15min) 1.52mm constant, 3 directions X, Y, Z each 2 hours			
Safety Agency Approvals	-	UL60950-1, CSA60950-1, EN60950-1			
Weight	g	CC1R5: 3.2, CC3: 4.5, CC6: 5.8, CC10:10.0, CC15: 12.5, CC25: 20.0			
Size (L x W x H)	mm	CC1R5: 16.51 x 16.61 x 8.51; CC3: 22.86 x 16.61 x 8.51; CC6: 22.86 x 21.11 x 8.51			
(Through Hole & SMD package)		CC10: 35.56 x 22.61 x 8.51 CC15: 38.10 x 32.11 x 7.49; CC25: 43.21 x 44.91 x 7.49 CC3: SIP type 27.69 x 9.19 x 17.91			
Warranty	yrs	5			

Notes:

1. For 24V/30V output - connect across +Vout & -Vout and leave "common out" pin not connected.
2. Based upon equal load current from both outputs. 3. For 15V output connect trim to -Vout.
4. See Installation Manual for full specifications, test methods of parameters and application notes.

Model Selector

Output Voltage (V)	Output Current (A)	Output Power (W)	5V Input	12V Input	24V Input	48V Input
Single Outputs						
3.3	0.4	1.5	CC1R5-0503SF-E	CC1R5-1203SF-E	CC1R5-2403SF-E	CC1R5-4803SF-E
3.3	0.8	3	CC3-0503SF-E	CC3-1203SF-E	CC3-2403SF-E	CC3-4803SF-E
3.3	1.2	6	CC6-0503SF-E	CC6-1203SF-E	CC6-2403SF-E	CC6-4803SF-E
3.3	2.5	10	CC10-0503SF-E	CC10-1203SF-E	CC10-2403SF-E	CC10-4803SF-E
3.3	4.5	15	-	-	CC15-2403SF-E	-
3.3	7.5	25	-	-	CC25-2403SF-E	-
5	0.3	1.5	CC1R5-0505SF-E	CC1R5-1205SF-E	CC1R5-2405SF-E	CC1R5-4805SF-E
5	0.6	3	CC3-0505SF-E	CC3-1205SF-E	CC3-2405SF-E	CC3-4805SF-E
5	1.0	5	CC6-0505SF-E	-	-	-
5	1.2	6	-	CC6-1205SF-E	CC6-2405SF-E	CC6-4805SF-E
5	2.0	10	CC10-0505SF-E	CC10-1205SF-E	CC10-2405SF-E	CC10-4805SF-E
5	3.0	15	-	-	CC15-2405SF-E	-
5	5.0	25	-	-	CC25-2405SF-E	-
12(15)	0.125(0.1)	1.5	CC1R5-0512SF-E	CC1R5-1212SF-E	CC1R5-2412SF-E	CC1R5-4812SF-E
12(15)	0.25(0.2)	3	CC3-0512SF-E	CC3-1212SF-E	CC3-2412SF-E	CC3-4812SF-E
12(15)	0.5(0.4)	6	CC6-0512SF-E	CC6-1212SF-E	CC6-2412SF-E	CC6-4812SF-E
12(15)	0.8(0.64)	10	CC10-0512SF-E	-	-	-
12(15)	1.0(0.8)	10	-	CC10-1212SF-E	CC10-2412SF-E	CC10-4812SF-E
Dual Outputs						
±12 (15)[3]	0.06(0.05)	1.5	CC1R5-0512DF-E	CC1R5-1212DF-E	CC1R5-2412DF-E	CC1R5-4812DF-E
±12 (15)[3]	0.125(0.1)	3	CC3-0512DF-E	CC3-1212DF-E	CC3-2412DF-E	CC3-4812DF-E
±12 (15)[3]	0.25(0.2)	6	CC6-0512DF-E	CC6-1212DF-E	CC6-2412DF-E	CC6-4812DF-E
±12 (15)[3]	0.4(0.32)	10	CC10-0512DF-E	-	-	-
±12 (15)[3]	0.45(0.36)	10	-	CC10-1212DF-E	CC10-2412DF-E	CC10-4812DF-E

Options

Version	Description
F-E	Through hole mounting (DIP)
R-E	Surface mount (SMD)
S-E	Through hole mounting (SIP) **(SIP option available for CC3 only)**

Pinout (CC1R5, 3, 6, and 10)

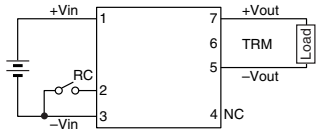
Pin	Single	Dual
1	+Vin	+Vin
2	RC	RC
3	-Vin	-Vin
4	NC	-Vout
5	-Vout	Common out
6	TRM	TRM
7	+Vout	+Vout

For CC15 and 25 see Installation Manual online

Pin Out Diagrams CC-E Series

CONNECTIONS

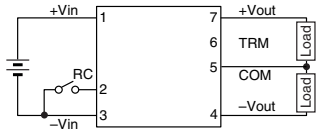
CC1R5-□□□□S□-E



TERMINAL PIN CONFIGUTATION

No.1	+Vin
No.2	RC
No.3	–Vin
No.4	NC
No.5	–Vout
No.6	TRM
No.7	+Vout

CC1R5-□□□□D□-E

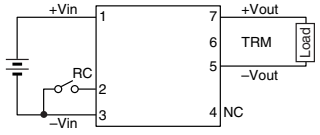


TERMINAL PIN CONFIGUTATION

No.1	+Vin
No.2	RC
No.3	–Vin
No.4	–Vout
No.5	Common out
No.6	TRM
No.7	+Vout

CONNECTIONS

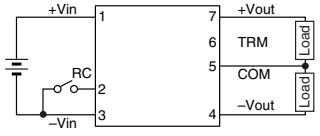
CC3-□□□□S□-E



TERMINAL PIN CONFIGUTATION

No.1	+Vin
No.2	RC
No.3	–Vin
No.4	NC
No.5	–Vout
No.6	TRM
No.7	+Vout

CC3-□□□□D□-E

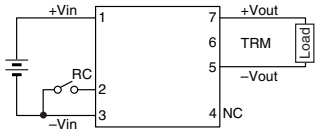


TERMINAL PIN CONFIGUTATION

No.1	+Vin
No.2	RC
No.3	–Vin
No.4	–Vout
No.5	Common out
No.6	TRM
No.7	+Vout

CONNECTIONS

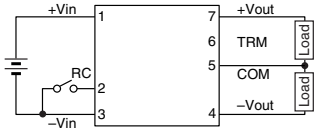
CC6-□□□□S□-E



TERMINAL PIN CONFIGUTATION

No.1	+Vin
No.2	RC
No.3	–Vin
No.4	NC
No.5	–Vout
No.6	TRM
No.7	+Vout

CC6-□□□□D□-E

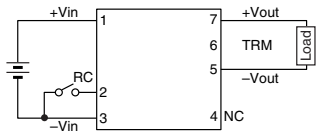


TERMINAL PIN CONFIGUTATION

No.1	+Vin
No.2	RC
No.3	–Vin
No.4	–Vout
No.5	Common out
No.6	TRM
No.7	+Vout

CONNECTIONS

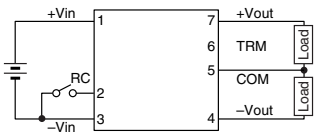
CC10-□□□□S□-E



TERMINAL PIN CONFIGUTATION

No.1	+Vin
No.2	RC
No.3	–Vin
No.4	NC
No.5	–Vout
No.6	TRM
No.7	+Vout

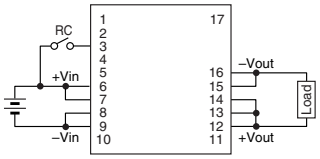
CC10-□□□□D□-E



TERMINAL PIN CONFIGUTATION

No.1	+Vin
No.2	RC
No.3	–Vin
No.4	–Vout
No.5	Common out
No.6	TRM
No.7	+Vout

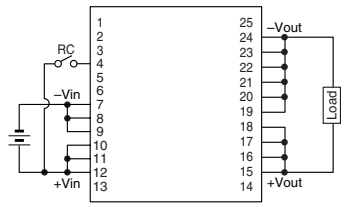
CONNECTION **CC15-xxxxSF-E (DIP TYPE)**



TERMINAL PIN CONFIGUTATION

No.1	NC	No.10	NC
No.2	NC	No.11	NC
No.3	RC	No.12	+Vout
No.4	NC	No.13	+Vout
No.5	NC	No.14	+Vout
No.6	+Vin	No.15	–Vout
No.7	+Vin	No.16	–Vout
No.8	–Vin	No.17	NC
No.9	–Vin		

CONNECTION **CC25-xxxxSF-E (DIP TYPE)**



TERMINAL PIN CONFIGUTATION

No.1	NC	No.10	+Vin	No.19	–Vout
No.2	NC	No.11	+Vin	No.20	–Vout
No.3	NC	No.12	+Vin	No.21	–Vout
No.4	RC	No.13	NC	No.22	–Vout
No.5	NC	No.14	NC	No.23	–Vout
No.6	NC	No.15	+Vout	No.24	–Vout
No.7	–Vin	No.16	+Vout	No.25	NC
No.8	–Vin	No.17	+Vout		
No.9	–Vin	No.18	+Vout		

- Compact Footprint / Low Profile
- 24V & 48V Inputs
- 3.3V to 15V Outputs
- Input - Output Isolation
- Through Hole or SMT Versions
- DC OK signal
- Sequencing pin
- 5 Year Warranty

CC-P-E Series

Ultra Compact, 15W to 30W DC-DC Converters

Key Market Segments & Applications

Process Control
Instrumentation
Datacom & Telecom

CC-E Features and Benefits

Features	Benefits
• Compact	• Less PCB Area Used
• Five Sided Shielding (cased version)	• Lower radiated EMI
• Parallel Operation	• Provides additional power / redundancy

Specifications					
Nominal Output Voltage	V	3.3V	5V	12V	15V
DC Input	VDC	24V Nominal: 18-36V, 48V Nominal: 36-76V			
Efficiency	%	89 to 92% model dependant			
Initial set accuracy	%	±1%			
Total Regulation limits	%	+5%, -3%			
Output Adjustment	-	None			
Temperature Coefficient	%/°C	<0.02%/°C			
Preload	A	None			
Output Ripple	mV	50mV		150mV	
Overcurrent Protection	-	> 103% of nominal rating			
Overvoltage protection	-	Operates at 115 - 145% of nominal voltage			
Remote On/Off (RC)	-	Logic high (pull high to shutdown), referenced to -Vin			
Alarm (ALM)	-	Low On Fail, referenced to -Vin. 20 units maximum			
Sequencing (PO)	-	Connecting PO terminals on multiple power supplies ensures all simulataneously start up (20 units maximum)			
Cooling	-	Convection			
Operating Temp. Range	°C	-40°C to +85°C			
Storage Temperature	°C	-40°C to +85°C			
Humidity (Non condensing)	%RH	5 - 95%RH			
Isolation Voltage (Cased version)	VDC	1000VDC 1 min. Input-Output, Input-Chassis, Output-Chassis			
Isolation Voltage (Uncased version)	VDC	1500VDC 1 min. Input-Output			
Isolation Resistance	Ω	>50mΩ at 25°C and 70%RH, 500 VDC Input-Output, Input-Case, Output-Case			
Shock (Non operating)	-	980m/s² (100G), 6ms, 6 directions, 3 times			
Vibration (non operating)	-	10-55-10 Hz (sweep for 15 min.) 1.52mm amplitude, 2 hour X, Y, Z			
Safety Certifications	-	UL60950-1, CSA C22.2 No.60950-1 (c-UL), EN60950-1			
Weight	g	With case: CC15 15g, CC30 20g. Without case: CC15 10g, CC30 15g			
Size (LxWxH) (Thru hole ver., w/ case)	mm	CC15: 38.4 x 6.8 x 29.6mm, CC30: 38.4 x 8.3 x 33.5mm			
Warranty	yrs	5			

Notes:
See Installation Manual for full specifications, test methods of parameters and application notes.

Model Selector

Output Voltage (V)	Output Current (A)	Max O/P Power (W)	24V Input	48V Input
3.3	4.5	15	CC15-2403SFP-E	CC15-4803SFP-E
3.3	9	30	CC30-2403SFP-E	CC30-4803SFP-E
5	3	15	CC15-2405SFP-E	CC15-4805SFP-E
5	6	30	CC30-2405SFP-E	CC30-4805SFP-E
12	1.25	15	CC15-2412SFP-E	CC15-4812SFP-E
12	2.5	30	CC30-2412SFP-E	CC30-4812SFP-E
15	1	15	CC15-2415SFP-E	CC15-4815SFP-E
15	2	30	CC30-2415SFP-E	CC30-4815SFP-E

Options

Version	PIN	Case
CCxx-yyyySFP-E*	Through hole	Yes
CCxx-yyyySFH-E	Through hole	No
CCxx-yyyySRP-E	SMT	Yes
CCxx-yyyySRH-E	SMT	No

Where xx is output power & yyyy is input and output voltage combination. * denotes preferred model

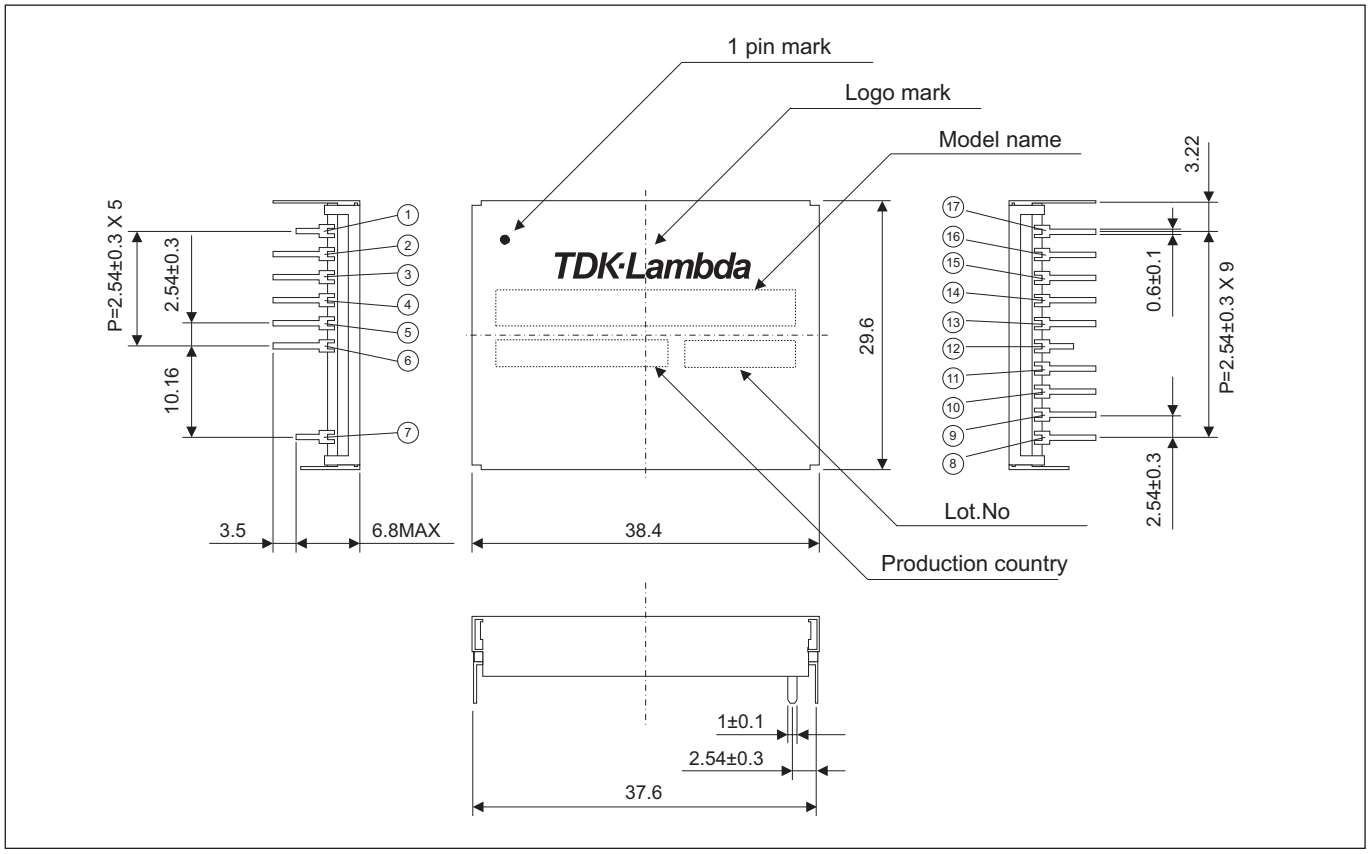
Pinout SFP-E Models

Pin	Pin Name	Function
1	Stopper	Stopper
2	+Vout	+DC output
3	+Vout	+DC output
4	+Vout	+DC output
5	-Vout	-DC output
6	-Vout	-DC output
7	Stopper	Stopper
8	NC	Not connected
9	ALM	Alarm
10	RC	Remote control
11	PO	Start in / out
12	Stopper	Stopper
13	+Vin	+DC input
14	+Vin	+DC input
15	-Vin	-DC input
16	-Vin	-DC input
17	NC	Not connected

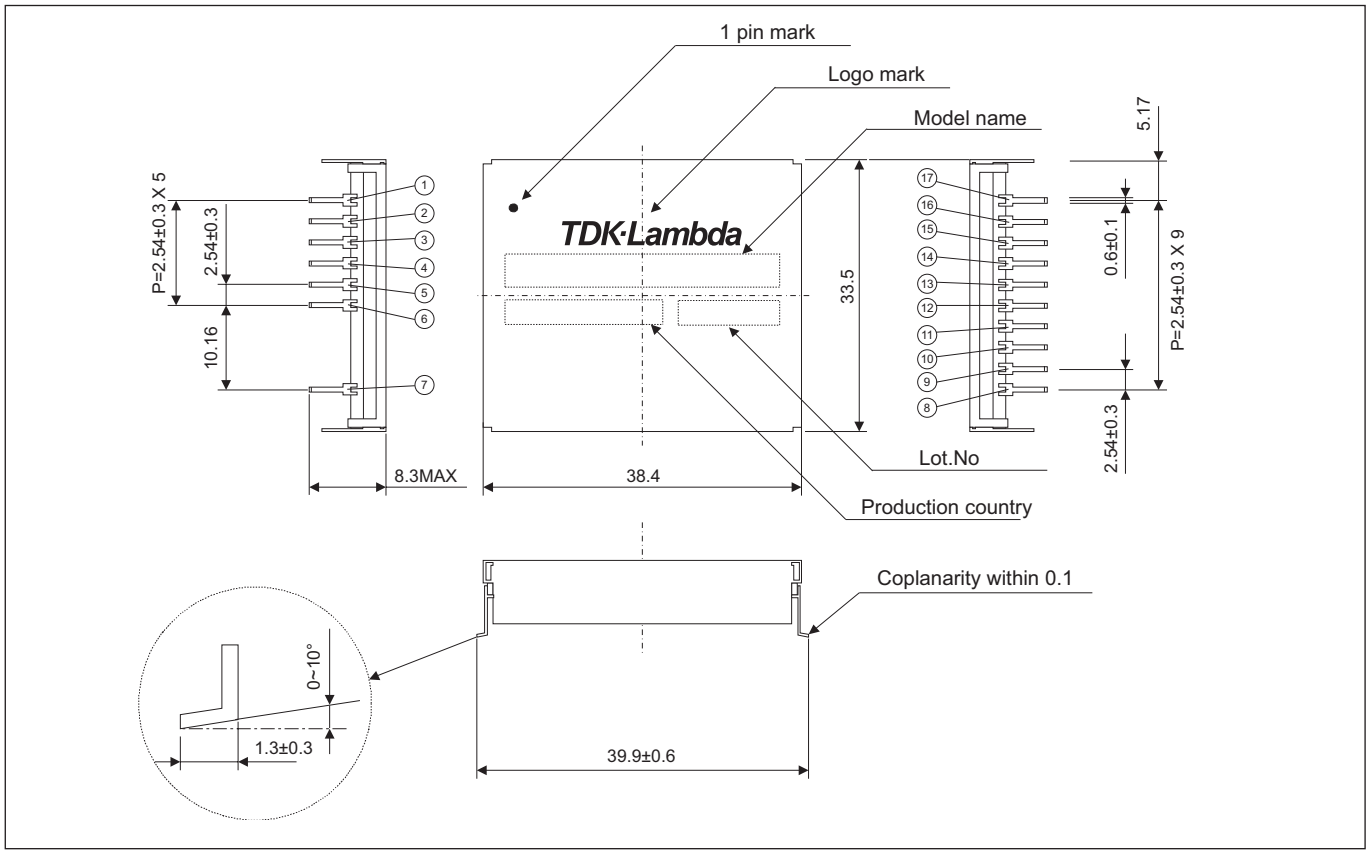
Pinout SRP-E Models

Pin	Pin Name	Function
1	NC	Not connected
2	+Vout	+DC output
3	+Vout	+DC output
4	+Vout	+DC output
5	-Vout	-DC output
6	-Vout	-DC output
7	NC	Not connected
8	NC	Not connected
9	ALM	Alarm
10	RC	Remote control
11	PO	Start in / out
12	NC	Not connected
13	+Vin	+DC input
14	+Vin	+DC input
15	-Vin	-DC input
16	-Vin	-DC input
17	NC	Not connected

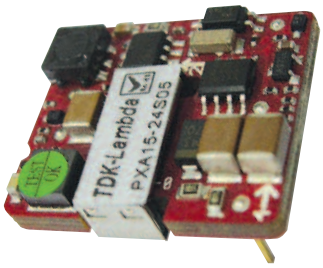
Outline Drawing CC15-xxxxSFP-E Series



Outline Drawing CC30-xxxxSRP-E Series



Innovating Reliable Power TDK·Lambda



- Industry Standard 1" x 1" Footprint
- 9-36V or 18-75VDC Input
- Pin & Surface Mount Models
- Efficiency up to 88%
- Fixed switching Frequency

Key Market Segments & Applications

Telecom/Datcom
Process Control
Wireless Network
Measurement & Test

PXA15 Series

Single Output 15W
DC-DC Converters

PXA15 Features and Benefits

Features	Benefits
• UL, C-UL, VDE CE	• Easier system approvals
• 2:1 and 4:1 Range Input	• Less parts to inventory
• Surface mount or Through hole	• Reduced radiated noise

Specifications	Single Output		
Max Output Power	15W		
Voltage Accuracy	+/-1%		
Voltage Adjustment (1)	+/-10%		
Minimum Load	None		
Line Regulation	+/-0.2%		
Load Regulation	+/-0.2%		
Ripple and Noise	See table		
Start up time	Nominal VIN and constant Resistive load		Power Up 30mS Remote ON/OFF 30mS
Start up voltage 2:1 Input 24V/48V	17VDC/33VDC		
Start up voltage 4:1 Input 24V/48V	9VDC/18VDC		
Shut down voltage 2:1 Input 24V/48V	14.5VDC/30.5VDC		
Shut down voltage 4:1 24V/48V	8VDC/16VDC		
Remote on/off	Positive Logic: ON: Open or 3-15V, OFF Short or <1.2V Negative Logic: ON: Short or <1.2V, OFF: Open or 3-15V		
Efficiency	See table		
Temperature Coefficient	<+/-0.02%/˚C		
Operating Temperature	-40˚C to +85˚C, derating necessary above 60˚C		
Storage Temperature	-55˚C to +125˚C		
Thermal Shock	MIL-STD-810F		
Relative Humidity (non condensing)	5 to 95%		
Transient Response (25% step load change)	PXA < 200μS, PXA-W < 300μS recovery		
Overvoltage Protection (Zener clamp)	120 - 130%		
Overcurrent and Short Circuit Protection	Typically at 150%, hiccup with self recovery		
Input Surge Voltage (Maximum for 100ms)	24V input: 50V, 48V input: 100V		
Reflected input ripple (peak to peak)	30mA Typ		
Isolation Voltage (Basic Insulation)	2250VDC minimum		
Isolation Resistance	10^9 Ω minimum		
Isolation Capacitance (max)	2:1 Input, 1000pF/ 4:1 Input, 1500pF		
Typical Switching Frequency (Fixed)	2:1 Input	3.3V, 5V 12V, 15V	270kHz 470kHz
	4:1 Input	3.3V, 5V 12V, 15V	350kHz 400kHz
MTBF (BELLCORE TR-NWT-000332)	2:1 Input 4:1 Input		2,200,000 hours 1,322,000 hours
	MIL-STD-810F		
Conducted and Radiated Emissions (2)	EN55022 Level A		
Immunity (3)	EN61000-4-3, -4, -5, -6 Pref Criteria A		
Safety Agency Certifications	IEC60950-1, UL60950-1, EN60950-1, CE Mark		
Size mm (L x W x H)	27.9 x 23.9 x 8.5		
Weight (g)	10.5		
Warranty (yrs)	2		

Model Selector

Model	Output Voltage V	Output Current A	Output Power W	Input Voltage V	Nominal Input Current mA	Efficiency %	Ripple and Noise mVp-p	Max Load Capacitance uF
4:1 INPUT	**Single Outputs**							
PXA15-24WS3P3	3.3V	4.0A	13.2W	9 - 36VDC	680mA	85%	100mVp-p	1000uF
PXA15-48WS3P3	3.3V	4.0A	13.2W	18 - 75VDC	340mA	85%	100mVp-p	1000uF
PXA15-24WS05	5V	3.0A	15W	9 - 36VDC	754mA	87%	100mVp-p	1000uF
PXA15-48WS05	5V	3.0A	15W	18 - 75VDC	377mA	87%	100mVp-p	1000uF
PXA15-24WS12	12V	1.25A	15W	9 - 36VDC	793mA	86%	100mVp-p	330uF
PXA15-48WS12	12V	1.25A	15W	18 - 75VDC	397mA	86%	100mVp-p	330uF
PXA15-24WS15	15V	1.0A	15W	9 - 36VDC	763mA	86%	100mVp-p	220uF
PXA15-48WS15	15V	1.0A	15W	18 - 75VDC	382mA	86%	100mVp-p	220uF
2:1 INPUT								
PXA15-24S3P3	3.3V	3.5A	10.5W	18-36VDC	587mA	86%	75mVp-p	1000uF
PXA15-48S3P3	3.3V	3.5A	10.5W	36-75VDC	297mA	85%	75mVp-p	1000uF
PXA15-24S05	5V	3.0A	15W	18-36VDC	753mA	87%	75mVp-p	1000uF
PXA15-48S05	5V	3.0A	15W	36-75VDC	377mA	87%	75mVp-p	1000uF
PXA15-24S12	12V	1.25A	15W	18-36VDC	753mA	87%	100mVp-p	330uF
PXA15-48S12	12V	1.25A	15W	36-75VDC	377mA	87%	100mVp-p	330uF
PXA15-24S15	15V	1.0A	15W	18-36VDC	744mA	88%	100mVp-p	220uF
PXA15-48S15	15V	1.0A	15W	36-75VDC	372mA	88%	100mVp-p	220uF

Specification Notes:

(1) Output can be trimmed using an external resistor

(2) To meet EN55022 Class B external filter components are required. See additional application note.

(3) To meet EN61000-4-4, EN610004-5 an external filter capacitor is required. See additional application note.

Remote On/Off Options

Suffix	Description
P	Positive Logic
N	Negative Logic
S	Surface Mount
T	Trim

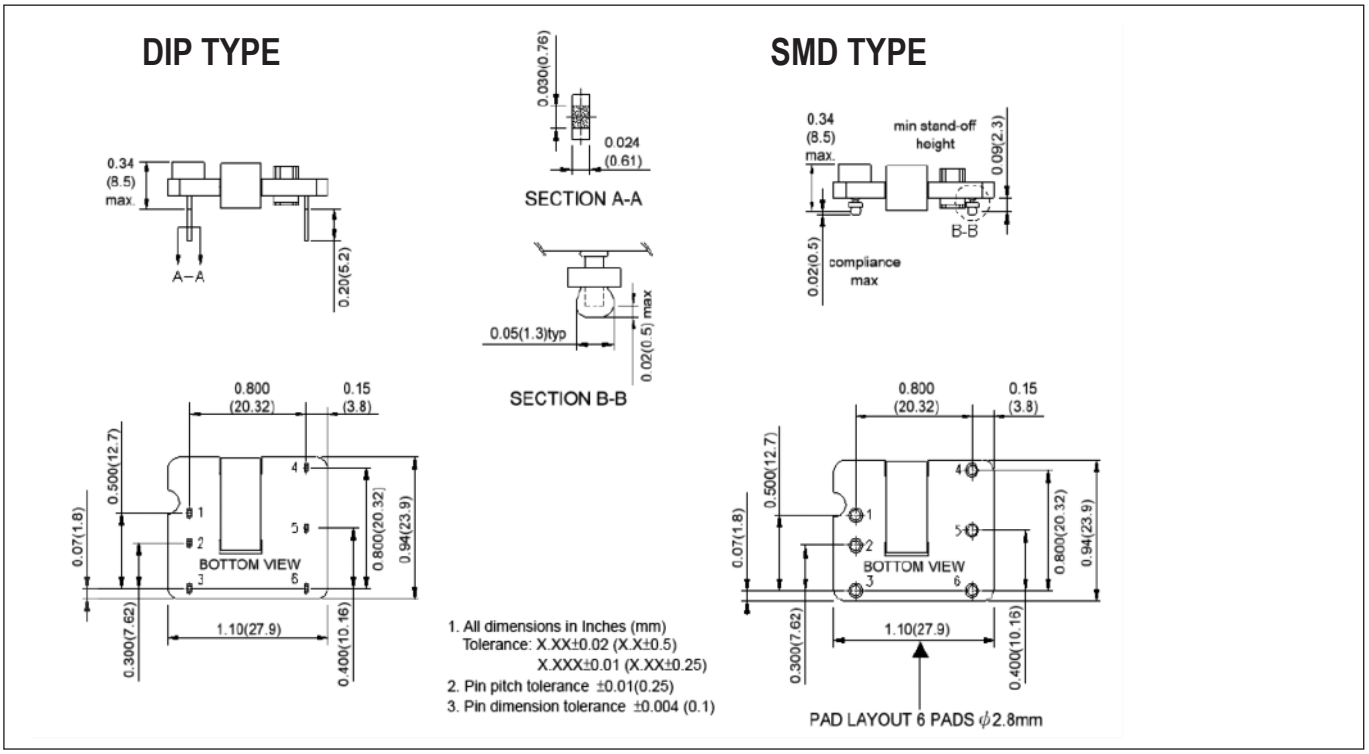
-NST or -NT as standard

Delete suffix if not required

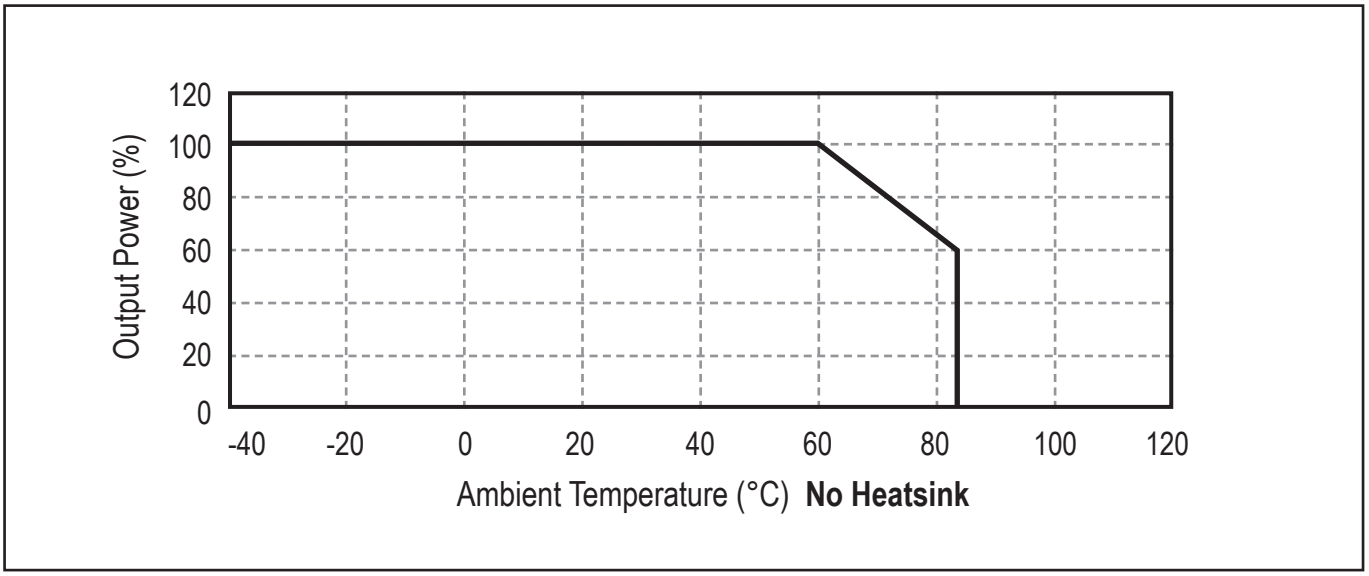
Pinout - Single Output

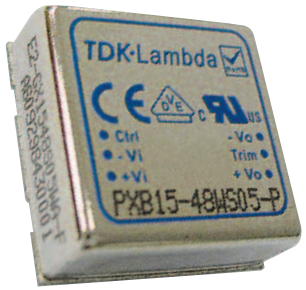
Pin#	Function
1	+ Input
2	– Input
3	Remote On/Off
4	+ Output
5	Trim
6	– Output

Outline Drawing PXA15 Series



Derating Curve PXA15 Series





PXB15 Series

Single and Dual output 15W
DC-DC converters

- Industry Standard 1" x 1" Footprint
- 9-36V or 18-75VDC Input
- Six Sided Shield
- Standard pin out compatible with 2" x 1" products
- Efficiency up to 89%
- Fixed switching frequency

Key Market Segments & Applications

Telecom/Datacom
Process Control
Wireless Network
Measurement & Test

PXB15 Features and Benefits

Features	Benefits
• UL, C-UL, VDE CE	• Easier system approvals
• 2:1 and 4:1 Range Input	• Less parts to inventory
• Low Profile	• Reduced radiated noise

Specifications	Single Output	Dual Output
Max Output Power	15W	
Voltage Accuracy	+/-1%	
Voltage Adjustment (1)	+/-10%	
Minimum Load	None	
Line Regulation Single/Dual output	+/-0.2%	+/-0.5%
Load Regulation Single/Dual output	+/-0.2%	+/-1.0%
Cross regulation	+/-5%	
Ripple and Noise	See table	
Start up time	Nominal VIN and constant Resistive load	Power Up 30mS Remote ON/OFF 30mS
Start up voltage 2:1 Input 12V/24V/48V	9VDC/17VDC/33VDC	
Start up voltage 4:1 Input 24V/48V	9VDC/18VDC	
Shut down voltage 2:1 Input 12V/24V/48V	8VDC/14.5VDC/30.5VDC	
Shut down voltage 4:1 24V/48V	8VDC/16VDC	
Remote on/off	Positive Logic: ON: Open or 3-15V, OFF Short or <1.2V Negative Logic: ON: Short or <1.2V, OFF: Open or 3-15V	
Effciency	See table	
Temperature Coefficient	<+/-0.02%/˚C	
Operating Temperature	-40˚ to +85˚C, derating necessary above 60˚C	
Storage Temperature	-55˚ to +125˚C	
Thermal Shock	MIL-STD-810F	
Relative Humidity (non condensing)	5 to 95%	
Transient Response (25% step load change)	250μs recovery	
Overvoltage Protection (Zener clamp)	120-130%	
Overcurrent and Short Circuit Protection	Typically at 150%, hiccup with self recovery	
Input Surge Voltage (Maximum for 100ms)	12V input: 36V, 24V input: 50V, 48V input: 100V	
Reflected input ripple (peak to peak)	30mA	
Isolation Voltage Input to Output	1600VDC minimum	
Input (output) to Case	1000VDC minimum	
Isolation Resistance	10^9 Ω minimum	
Isolation Capacitance (max)	1000pF	
Switching Frequency (Fixed)	400kHz typ	
MTBF (BELLCORE TR-NWT-000332)	1,330,000 hours	
Vibration	MIL-STD-810F	
Conducted and Radiated Emissions (2)	EN55022 Level A	
Immunity (3)	EN61000-4-2, -3, -4, -5, -6 Pref Criteria A	
Safety Agency Certifications	IEC60950-1, UL60950-1, EN60950-1, CE Mark	
Size (mm) (L x W x H)	25.4 x 25.4 x 9.9	
Weight (g)	15	
Warranty (yrs)	2	

Model Selector

Model	Output Voltage V	Output Current A	Output Power W	Input Voltage V	Nominal Input Current mA	Efficiency %	Ripple and Noise mVp-p	Max Load Capcitance uF
4:1 INPUT	**Single Outputs**							
PXB15-24WS3P3	3.3V	4.0A	13.2W	9 - 36VDC	688mA	86%	75mVp-p	1000uF
PXB15-48WS3P3	3.3V	4.0A	13.2W	18 - 75VDC	336mA	86%	75mVp-p	1000uF
PXB15-24WS05	5.0V	3.0A	15W	9 - 36VDC	762mA	86%	75mVp-p	1000uF
PXB15-48WS05	5.0V	3.0A	15W	18 - 75VDC	382mA	86%	75mVp-p	1000uF
PXB15-24WS12	12V	1.25A	15W	9 - 36VDC	783mA	87%	100mVp-p	330uF
PXB15-48WS12	12V	1.25A	15W	18 - 75VDC	392mA	87%	100mVp-p	330uF
PXB15-24WS15	15V	1.0A	15W	9 - 36VDC	753mA	87%	100mVp-p	220uF
PXB15-48WS15	15V	1.0A	15W	18 - 75VDC	377mA	87%	100mVp-p	220uF
4:1 INPUT	**Dual Outputs**							
PXB15-24WD05	±5V	1.5A	15W	9 - 36VDC	772mA	85%	100mVp-p	±500uF
PXB15-24WD12	±12V	0.625A	15W	9 - 36VDC	753mA	87%	100mVp-p	±150uF
PXB15-24WD15	±15V	0.5A	15W	9 - 36VDC	744mA	88%	100mVp-p	±100uF
PXB15-48WD05	±5V	1.5A	15W	18 - 75VDC	386mA	85%	100mVp-p	±500uF
PXB15-48WD12	±12V	0.625A	15W	18 - 75VDC	382mA	86%	100mVp-p	±150uF
PXB15-48WD15	±15V	0.5A	15W	18 - 75VDC	377mA	87%	100mVp-p	±100uF
2:1 INPUT	**Single Outputs**							
PXB15-12S3P3	3.3V	4.0A	13.2W	9 - 18VDC	1375mA	84%	75mVp-p	1000uF
PXB15-24S3P3	3.3V	4.0A	13.2W	18 - 36VDC	671mA	86%	75mVp-p	1000uF
PXB15-48S3P3	3.3V	4.0A	13.2W	36 - 75VDC	336mA	86%	75mVp-p	1000uF
PXB15-12S05	5.0V	3.0A	15W	9 - 18VDC	1542mA	86%	75mVp-p	1000uF
PXB15-24S05	5.0V	3.0A	15W	18 - 36VDC	763mA	86%	75mVp-p	1000uF
PXB15-48S05	5.0V	3.0A	15W	36 - 75VDC	372mA	88%	75mVp-p	1000uF
PXB15-12S12	12V	1.25A	15W	9 - 18VDC	1605mA	85%	100mVp-p	330uF
PXB15-24S12	12V	1.25A	15W	18 - 36VDC	783mA	87%	100mVp-p	330uF
PXB15-48S12	12V	1.25A	15W	36 - 75VDC	387mA	88%	100mVp-p	330uF
PXB15-12S15	15V	1.0A	15W	9 - 18VDC	1506mA	87%	100mVp-p	220uF
PXB15-24S15	15V	1.0A	15W	18 - 36VDC	744mA	88%	100mVp-p	220uF
PXB15-48S15	15V	1.0A	15W	36 - 75VDC	372mA	88%	100mVp-p	220uF
2:1 INPUT	**Dual Outputs**							
PXB15-12D05	±5V	±1.5A	15W	9 - 18VDC	1543mA	85%	100mVp-p	±500uF
PXB15-12D12	±12V	±0.625A	15W	9 - 18VDC	1506mA	87%	100mVp-p	±150uF
PXB15-12D15	±15V	±0.5A	15W	9 - 18VDC	1488mA	88%	100mVp-p	±100uF
PXB15-24D05	±5V	±1.5A	15W	18 - 36VDC	772mA	85%	100mVp-p	±500uF
PXB15-24D12	±12V	±0.625A	15W	18 - 36VDC	744mA	88%	100mVp-p	±150uF
PXB15-24D15	±15V	±0.5A	15W	18 - 36VDC	744mA	88%	100mVp-p	±100uF
PXB15-48D05	±5V	±1.5A	15W	36 - 75VDC	386mA	85%	100mVp-p	±500uF
PXB15-48D12	±12V	±0.625A	15W	36 - 75VDC	368mA	89%	100mVp-p	±150uF
PXB15-48D15	±15V	±0.5A	15W	36 - 75VDC	372mA	88%	100mVp-p	±100uF

Specification Notes:

(1) Output can be trimmed using an external resistor.

(2) To meet EN55022 Class B external filter components are required. See additional application note.

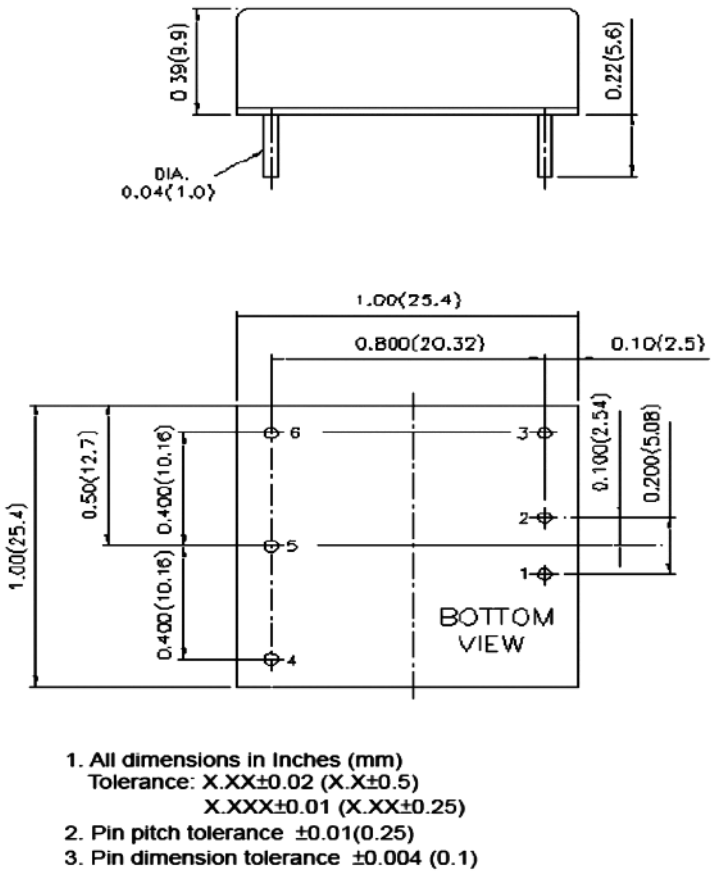
(3) To meet EN61000-4-4, EN610004-5 an external filter capacitor is required. See additional application note.

Options

Suffix	Description
P	Positive Logic
N	Negative Logic
T	Trim

–NT as standard Delete suffix if not required

Outline Drawing PXB15 Series

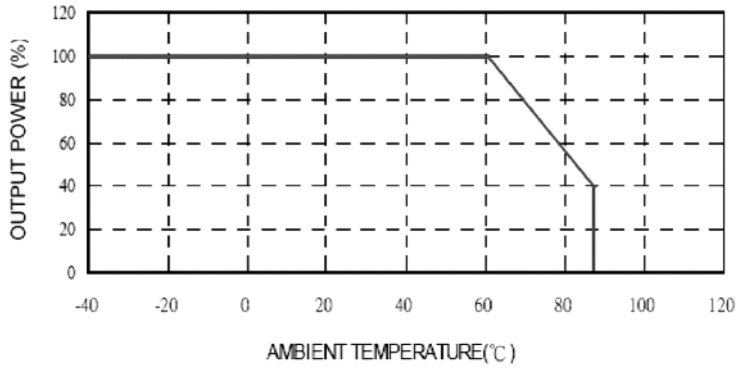


1. All dimensions in Inches (mm)
   Tolerance: X.XX±0.02 (X.X±0.5)
   X.XXX±0.01 (X.XX±0.25)
2. Pin pitch tolerance ±0.01(0.25)
3. Pin dimension tolerance ±0.004 (0.1)

Pinout

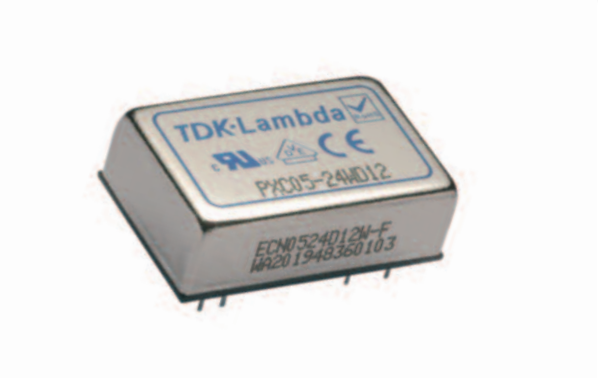
Pin#	Function	
	Single Output	**Dual Output**
1	+ Input	+ Input
2	– Input	– Input
3	Remote On/Off	Remote On/Off
4	+ Output	+ Output
5	Trim	Common
6	– Output	– Output

Derating Curve PXB15 Series



No Heatsink

Innovating Reliable Power TDK·Lambda



- Industry Standard 24 Pin Dip Package
- Five Sided Shielding
- Wide Range 4:1 Input
- 3.3, 5, 12, 15 Volt Outputs
- Pin & Surface Mount Models

Key Market Segments & Applications

Telecom
Datacom
Factory Automation & Process Control

PXC05 Series

Single and Dual Output 5W
DC-DC Converters

PXC05 Features and Benefits

Features	Benefits
• UL, C-UL, TUV, CE approvals	• Easier system approvals
• Wide range input	• Less parts to inventory
• Five sided shielding	• Reduced radiated noise

Specifications

ITEMS	PXC05
Max Output Power	5W
Voltage Accuracy	+/-2%
Voltage Adjustment	None
Minimum Load (1)	10%
Line Regulation	+/-0.2%
Load Regulation (25% to100%)	Single Output: +/-0.5%,Dual Output: +/-1%
Cross Regulation (25% to100%)	Dual +/-5%
Ripple and Noise	50mVp-p (20MHz bandwidth)
Start up time	600ms
Temperature Coefficient	<+/-0.02%/˚C
Operating Temperature	See derating curves
Maximum Case Temperature	+100˚C
Storage Temperature	-55˚C to +105˚C
Thermal Shock	MIL-STD-810D
Relative Humidity (non condensing)	5 to 95%
Transient Response	200μs recovery (25% step load change)
Overvoltage Protection	None
Overcurrent Protection	Typically at 170%, self recovery
Input Surge Voltage (Max for 100ms)	12V input: 36V, 24V input: 50V, 48V input: 100V
Reflected input ripple (peak to peak) (2)	20mA
Isolation Voltage	1600VDC min.
Isolation Resistance	10^9 Ω min.
Isolation Capacitance (max)	300pF
Typical Switching Frequency (Fixed)	300kHz
MTBF (BELLCORE TR-NWT-000332)	3,165,000 hours
Vibration	10 - 55Hz, 2G, 30 minutes each X, Y, Z axis
Conducted and Radiated Emissions	EN55022 Level A
Immunity	EN61000-4-2, -3, -4, -5, -6 Pref Criteria 2
Safety Agency Approval	IEC60950-1, UL/CSA60950-1, EN60950-1, CE Mark
Size mm (L x W x H)	32 x 21 x 11
Weight (g)	DIP 16 SMD 18
Warranty (yrs)	2

Notes: (1) To meet regulation & noise specifications. Operation at zero load will not damage the device
(2) 12μH source impedance in series with + input (3) SMD package: Add suffix "/SMD" to model number.

Model Selector

Model	Output Voltage (V)	Output Current (mA)	Output Power (W)	Input Voltage (V)	Nominal Input Current (mA)	Efficiency (%)	Max Load Capacity (uF)
Single Outputs							
PXC05-24WS3P3	3.3	1000	3.3	9 - 36VDC	191	76	2200
PXC05-48WS3P3	3.3	1000	3.3	18 - 75VDC	100	73	2200
PXC05-24WS05	5	1000	5	9 - 36VDC	285	77	1000
PXC05-48WS05	5	1000	5	18 - 75VDC	145	76	1000
PXC05-24WS12	12	470	5.64	9 - 36VDC	309	80	220
PXC05-48WS12	12	470	5.64	18 - 75VDC	155	80	220
PXC05-24WS15	15	400	6	9 - 36VDC	329	80	150
PXC05-48WS15	15	400	6	18 - 75VDC	167	79	150
Dual Outputs							
PXC05-24WD05	+/-5	+/-500	5	9 - 36VDC	282	78	+/-680
PXC05-48WD05	+/-5	+/-500	5	18 - 75VDC	145	76	+/-680
PXC05-24WD12	+/-12	+/-230	5.52	9 - 36VDC	295	82	+/-100
PXC05-48WD12	+/-12	+/-230	5.52	18 - 75VDC	151	80	+/-100
PXC05-24WD15	+/-15	+/-190	5.7	9 - 36VDC	313	80	+/-68
PXC05-48WD15	+/-15	+/-190	5.7	18 - 75VDC	159	79	+/-68

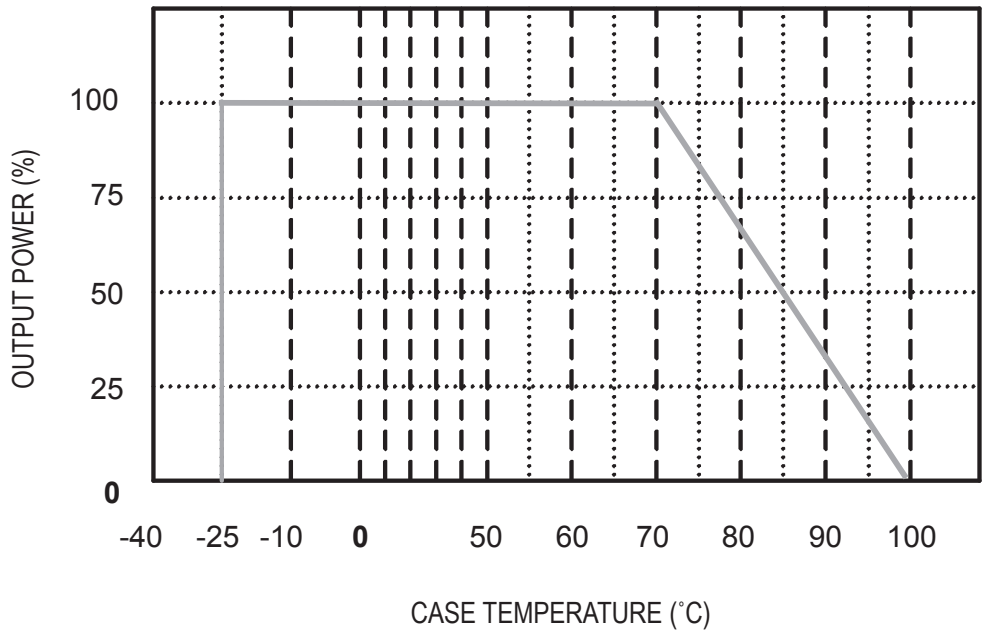
DIP Pin Connection

Pin #	Function	
	Single	Dual
2	- Input	- Input
3	- Input	- Input
9	NC	Common
10	no pin	no pin
11	NC	- Output
23	+ Input	+ Input
22	+ Input	+ Input
16	- Output	Common
15	no pin	no pin
14	+ Output	+ Output

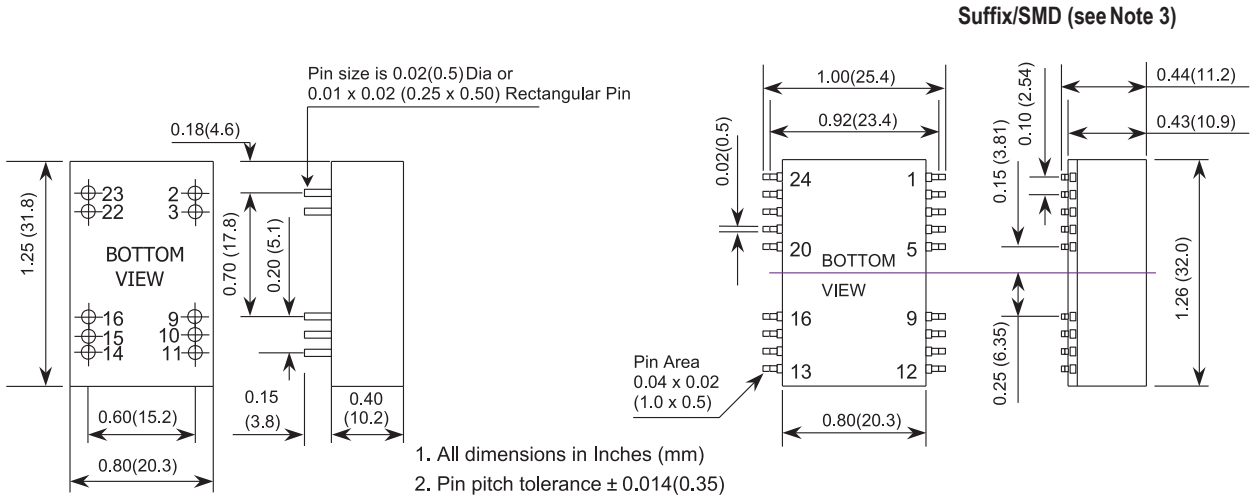
SMD Pin Connection

Pin #	Function	
	Single	Dual
2	- Input	- Input
3	- Input	- Input
9	NC	Common
10	NC	NC
11	NC	- Output
23	+ Input	+ Input
22	+ Input	+ Input
16	- Output	Common
15	NC	NC
14	+ Output	+ Output
Others	NC	NC

Derating Curve PXC05 Series



Outline Drawing PXC05 Series



Innovating Reliable Power TDK·Lambda

- Industry Standard 2" x 1" Footprint
- Six Sided Shielding
- Agency Approved
- 12V, 24V and 48V Inputs

Key Market Segments & Applications

Telecom
Datacom
Point of Load

PXD Series

Single and Dual Output 10 to 20W
DC-DC Converters

PXD Features and Benefits

Features	Benefits
• UL, CSA, EN, CE Approvals	• Easier System Approvals
• Wide Range Input	• Less Parts to Inventory
• Six Sided Shielding	• Reduced Radiated Noise

Specifications

ITEMS	PXD10	PXD15	PXD20
Max Output Power	10W	15W	20W
Voltage Accuracy	±2%	±1%	±1%
Voltage Adjustment (Single O/P Only)	None	None	±10%
Minimum Load, each output (1)	10%	10%	Single 0%; Dual 10%
Line Regulation	±1%	±1%	±0.2%
Load Regulation (10% to 100%)	Single Output: ±1% Dual Output: ±2%	Single Output: ±1% Dual Output: ±2%	±0.5% –
Cross Regulation (25% to 100%)		±5%	
Ripple and Noise	Single 50mV, Dual 75mV		Single 75mV, Dual 100mV
Start up time	20ms		10ms
Remote on/off (3)	Positive Logic: ON: Open or 3.5-12V, OFF Short or <1.2V Negative Logic: ON: Short or <1.2V, OFF: Open or 3.5-12V		
Temperature Coefficient	<±0.02%/°C		
Operating Temperature	-40°C to +85°C (model dependent - see derating curves)		
Maximum Case Temperature	+100°C		
Storage Temperature	-55°C to +105°C		
Thermal Shock	MIL-STD-810D		
Relative Humidity	5 to 95% (non condensing)		
Transient Response (25% step load chg.)	500μS recovery	500μS recovery	300μS recovery
Overvoltage Protection (Zener clamp)	1.5-3.3V: 3.9V, 5V: 6.2V, 12V: 15V, 15V: 18V		
Overcurrent & Short Circuit Protection	Typically at 150%, hiccup with self recovery		
Input Surge Voltage (Max. for 100ms)	12V input: 36V, 24V input: 50V, 48V input: 100V		
Reflected input ripple (peak to peak) (2)	30mA	20mA	20mA
Isolation Voltage	1600VDC minimum		
Isolation Resistance	109 Ω minimum		
Isolation Capacitance (max)	300pF		1000pF
Typical Switching Frequency (Fixed)	300kHz	Single: 500kHz Dual: 300kHz	500kHz
MTBF (BELLCORE TR-NWT-000332)	1,976,000 hours	2,041,000 hours	1,791,000 hours
Vibration	10 - 55Hz, 2G, 30 minutes each X, Y, Z axis		
Conducted and Radiated Emissions	EN55022 Level A		
Immunity	EN61000-4-2, -3, -4, -5, -6 Pref Criteria 2		
Safety Agency Approval	IEC606950, UL1950, EN60950, CE Mark (48V input only)		
Size mm (L x W x H)	50.8 x 25.4 x 10.2		
Weight (g)	27		
Warranty (yrs)	2		

Specification Notes:

(1) To meet regulation & noise specifications. Operation at zero load will not damage the device.

(2) 12μH source impedance in series with + input (3) Positive logic standard on 20W (see options table). Input current 2.5mA

Model Selector

Output Volt (V)	Output Current (A)	Output Power (W)	Input Volt (V)	Model	Efficiency (%)
3.3	2.0	6.6	9 - 18VDC	PXD10-12S3P3	80
3.3	2.0	6.6	18 - 36VDC	PXD10-24S3P3	80
3.3	2.0	6.6	36 - 75VDC	PXD10-48S3P3	79
3.3	5.0	16.5	9 - 18VDC	PXD20-12S3P3	84
3.3	5.0	16.5	18 - 36VDC	PXD20-24S3P3	86
3.3	5.0	16.5	36 - 75VDC	PXD20-48S3P3	87
5	2.0	10	9 - 36VDC	PXD10-24WS05	80
5	2.0	10	18 - 75VDC	PXD10-48WS05	80
5	4.0	20	9 - 18VDC	PXD20-12S05	87
5	4.0	20	18 - 36VDC	PXD20-24S05	89
5	4.0	20	36 - 75VDC	PXD20-48S05	89
12	0.83	10	9 - 36VDC	PXD10-24WS12	82
12	0.83	10	18 - 75VDC	PXD10-48WS12	84
12	1.67	20	9 - 18VDC	PXD20-12S12	85
12	1.67	20	18 - 36VDC	PXD20-24S12	87
12	1.67	20	36 - 75VDC	PXD20-48S12	88
15	0.67	10	9 - 36VDC	PXD10-24WS15	80
15	0.67	10	18 - 75VDC	PXD10-48WS15	84
15	1.33	20	9 - 18VDC	PXD20-12S15	85
15	1.33	20	18 - 36VDC	PXD20-24S15	87
15	1.33	20	36 - 75VDC	PXD20-48S15	87
Dual Outputs					
±5	±1.5	15	9 - 18VDC	PXD15-12D05	83
±5	±1.5	15	18 - 36VDC	PXD15-24D05	84
±5	±1.5	15	36 - 75VDC	PXD15-48D05	85
±12	±0.416	10	9 - 36VDC	PXD10-24WD12	80
±12	±0.416	10	18 - 75VDC	PXD10-48WD12	78
±12	±0.833	20	9 - 18VDC	PXD20-12D12	86
±12	±0.833	20	18 - 36VDC	PXD20-24D12	87
±12	±0.833	20	36 - 75VDC	PXD20-48D12	88
±15	±0.333	10	9 - 36VDC	PXD10-24WD15	80
±15	±0.333	10	18 - 75VDC	PXD10-48WD15	81
±15	±0.667	20	9 - 18VDC	PXD20-12D15	86
±15	±0.667	20	18 - 36VDC	PXD20-24D15	87
±15	±0.667	20	36 - 75VDC	PXD20-48D15	87

*** OTHER MODELS AVAILABLE ON REQUEST ***

Pinout

Pin#	Function	
	Single Output	**Dual Output**
1	+ Input	+ Input
2	- Input	- Input
3	+ Output	+ Output
4	Trim (20W only)	Common
5	- Output	- Output
6	Remote On/Off	Remote On/Off

Remote On/Off Options

Suffix	Function
-P*	Positive Logic
-N	Negative Logic

Example: PXD1548S12-N * Included in PXD20 models

Notes:

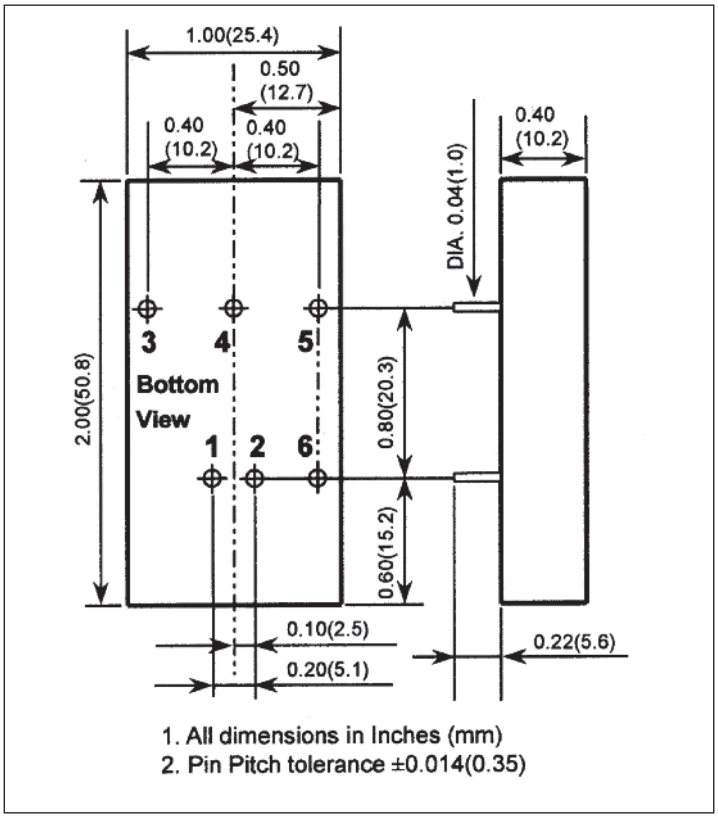
Remote On/Off is optional on PXD-10 and PXD-15 (add suffix -P or -N if required)
Remote On/Off positive Logic is standard on PXD-20 (add suffix -N if negative logic required)

Notes:

(1) With external ceramic capacitor (24V: 4.7μF, 48V: 2.2μF) connected across input pins

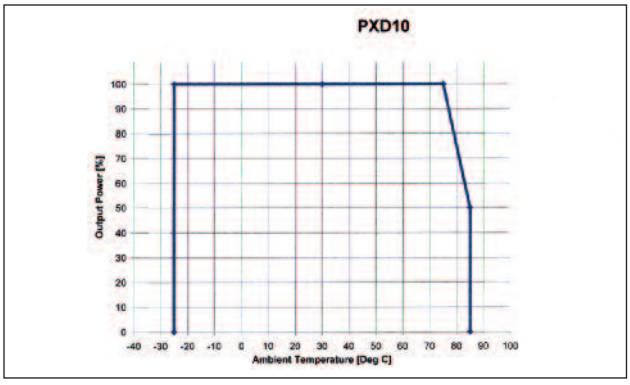
(2) For EN61000-4-4 & -5 compliance fit external electrolytic capacitor (24V: 330μF, 48V: 220μF) connected across input pins

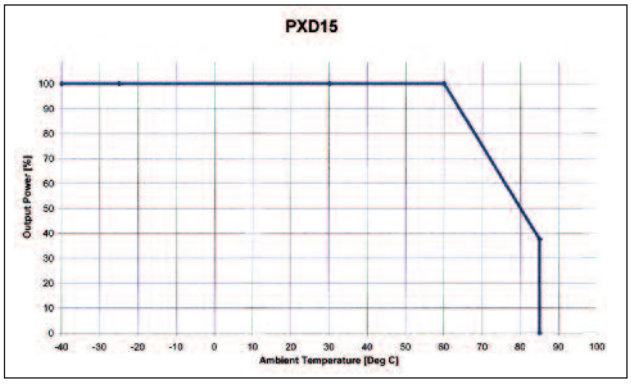
Outline Drawing PXD Series

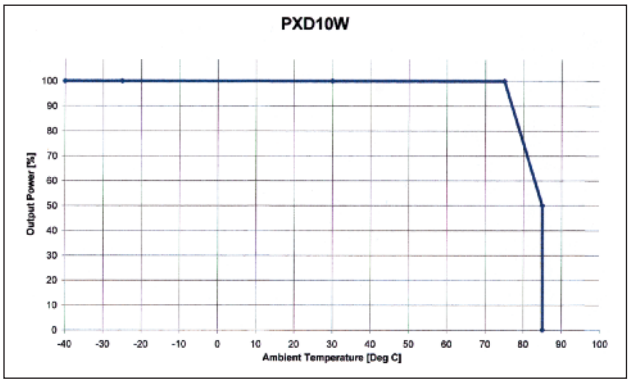


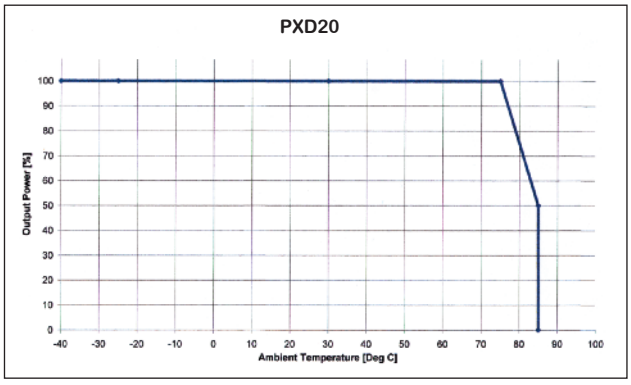
1. All dimensions in Inches (mm)
2. Pin Pitch tolerance ±0.014(0.35)

Derating Curves PXD Series









- Industry Standard 2" x 1" Footprint
- Six Sided Shielding
- Safety Agency Certifications
- 9-36V or 18-75VDC Input

Key Market Segments & Applications

Telecom
Datacom
Process Control

PXD30W Series

Single and Dual output 30W
DC-DC converters

PXD30W Features and Benefits

Features	Benefits
• Safety Certification	• Easier system approvals
• Wide range input	• Less parts to inventory
• Six sided shielding	• Reduced radiated noise

Specifications		Single Output	Dual Output
ITEMS			
Max Output Power		30W	
Voltage Accuracy		±1%	
Voltage Adjustment		±10%	None
Minimum Load		None	
Line Regulation		±0.2%	
Load Regulation		±0.5%	±1%
Cross Regulation (25% to 100%)		-	±5%
Ripple and Noise		<5.1V output: 100mV, 12-15V output: 150mV	
Start up time		30ms	
Remote on/off		Positive Logic: ON: Open or 3-12V, OFF Short or <1.2V	
		Negative Logic: ON: Short or <1.2V, OFF: Open or 3-12V	
Temperature Coefficient		<+/-0.02%/°C	
Operating Temperature		-40°C to +85°C, derating necessary above 50°C	
Maximum Case Temperature		+105°C (Overtemperature Protection +115°C)	
Storage Temperature		-55°C to +125°C	
Thermal Shock		MIL-STD-810F	
Relative Humidity (non condensing)		5 to 95%	
Transient Response (25% step load change)		250μs recovery	
Overvoltage Protection (Zener clamp)		5V: 6.2V, 12V: 15V, 15V: 18V	
Overcurrent and Short Circuit Protection		Typically at 150%, hiccup with self recovery	
Input Surge Voltage (Maximum for 100ms)		24V input: 50V, 48V input: 100V	
Reflected input ripple (peak to peak)		20mA	
Isolation Voltage		1600VDC minimum	
Isolation Resistance		10^9 Ω minimum	
Isolation Capacitance (max)		1500pF	
Typical Switching Frequency (Fixed)		430kHz	
MTBF (BELLCORE TR-NWT-000332)		3,163,000 hours	
Vibration		MIL-STD-810F	
Conducted and Radiated Emissions	(1)	EN55022 Level A	
Immunity	(2)	EN61000-4-2, -3, -4, -5, -6 Pref Criteria A	
Safety Agency Certifications		IEC60950-1, UL60950-1, EN60950-1, CE Mark	
Size mm (L x W x H)		50.8 x 25.4 x 10	
Weight (g)		30.5	
Warranty (yrs)		2	

Model Selector

Output Volt (V)	Output Curr (A)	Output Power (W)	Input Volt (V)	Model	Eff.(%)
Single Outputs					
3.3V	7.5A	24.75W	9 - 36VDC	PXD30-24WS3P3	86%
3.3V	7.5A	24.75W	18 - 75VDC	PXD30-48WS3P3	86%
5V	6.0A	30W	9 - 36VDC	PXD30-24WS05	88%
5V	6.0A	30W	18 - 75VDC	PXD30-48WS05	88%
12V	2.5A	30W	9 - 36VDC	PXD30-24WS12	89%
12V	2.5A	30W	18 - 75VDC	PXD30-48WS12	90%
15V	2.0A	30W	9 - 36VDC	PXD30-24WS15	89%
15V	2.0A	30W	18 - 75VDC	PXD30-48WS15	91%
Dual Outputs					
±5V	±3.0A	30W	9 - 36VDC	PXD30-24WD05	88%
±5V	±3.0A	30W	18 - 75VDC	PXD30-48WD05	88%
±12V	±1.25A	30W	9 - 36VDC	PXD30-24WD12	87%
±12V	±1.25A	30W	18 - 75VDC	PXD30-48WD12	88%
±15V	±1.0A	30W	9 - 36VDC	PXD30-24WD15	87%
±15V	±1.0A	30W	18 - 75VDC	PXD30-48WD15	88%

Specification Notes:

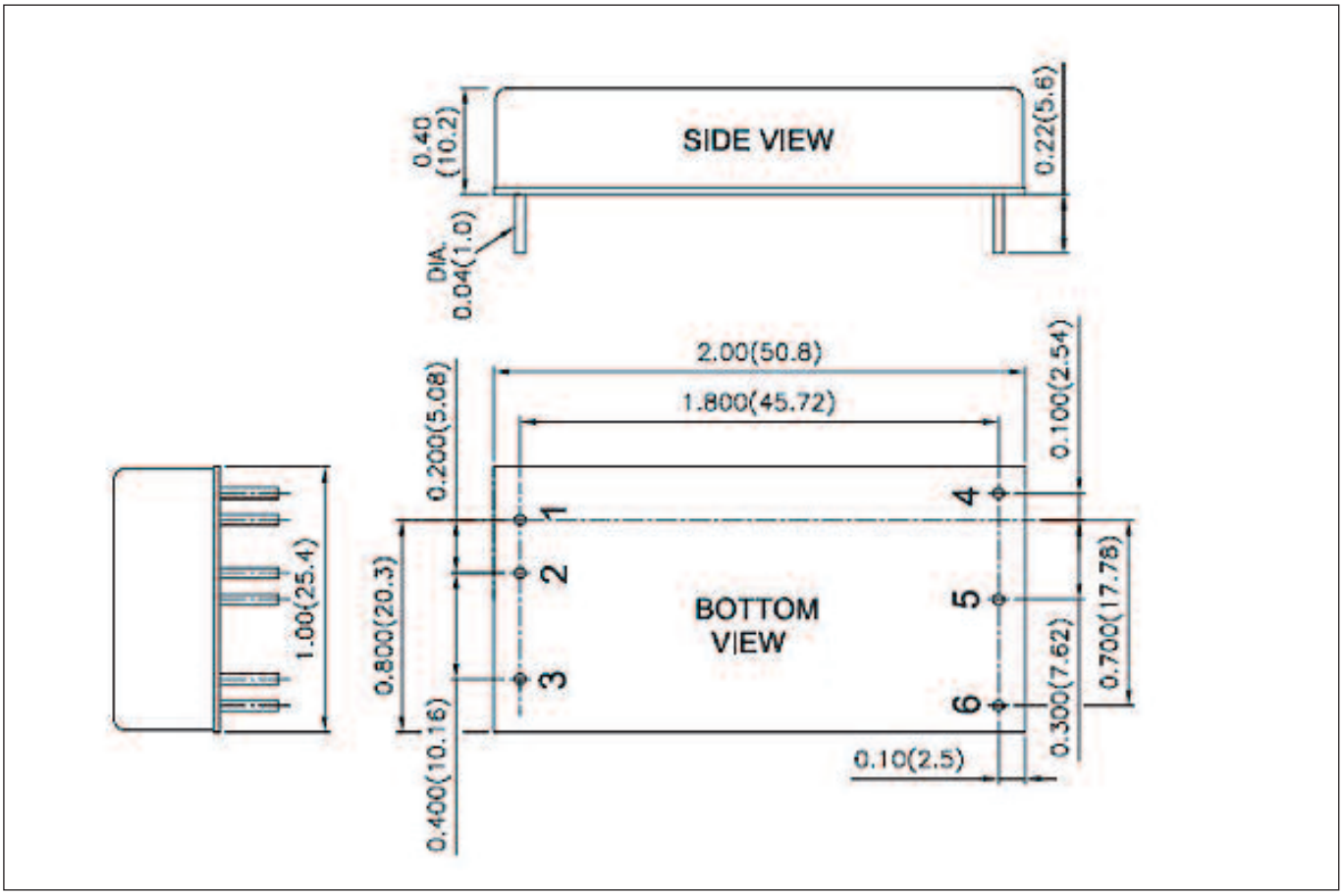
(1) With external ceramic capacitor (24V: 4.7uF, 48V: 2.2uF) connected across input pins

(2) For EN61000-4-4 & -5 compliance fit external electrolytic capacitor (24V: 330uF, 48V: 220uF) connected across input pins

Remote On/Off Options

Suffix	Function
No Suffix	Positive Logic
–N	Negative Logic

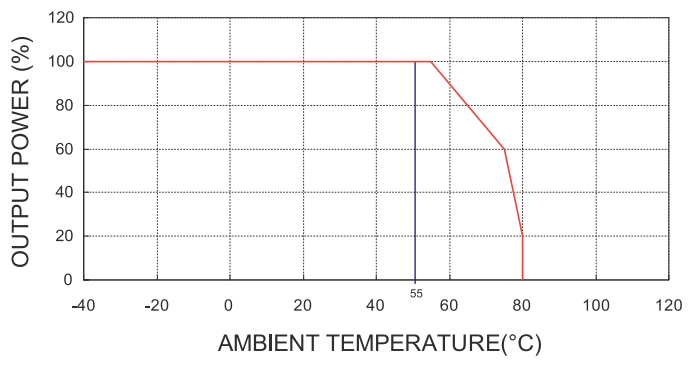
Outline Drawing PXD30W Series

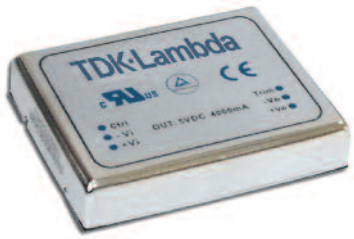


Pinout

Pin#	Function	
	Single Output	**Dual Output**
1	+ Input	+ Input
2	– Input	– Input
3	Remote On/Off	Remote On/Off
4	+ Output	+ Output
5	– Output	Common
6	Trim	– Output

Derating Curve PXD30W Series





- Industry Standard 2” x 1.6” Footprint
- Six Sided Shielding
- Agency Approved
- 12V, 24V and 48V Inputs

Key Market Segments & Applications

Telecom
Datacom
Point of Load

PXE Series

Single and Dual 20W to 30W
DC-DC Converters

PXE Features and Benefits

Features	Benefits
• UL, CSA, EN, CE Approvals	• Easier System Approvals
• Wide Range Input	• Less Parts to Inventory
• Six Sided Shielding	• Reduced Radiated Noise

Specifications

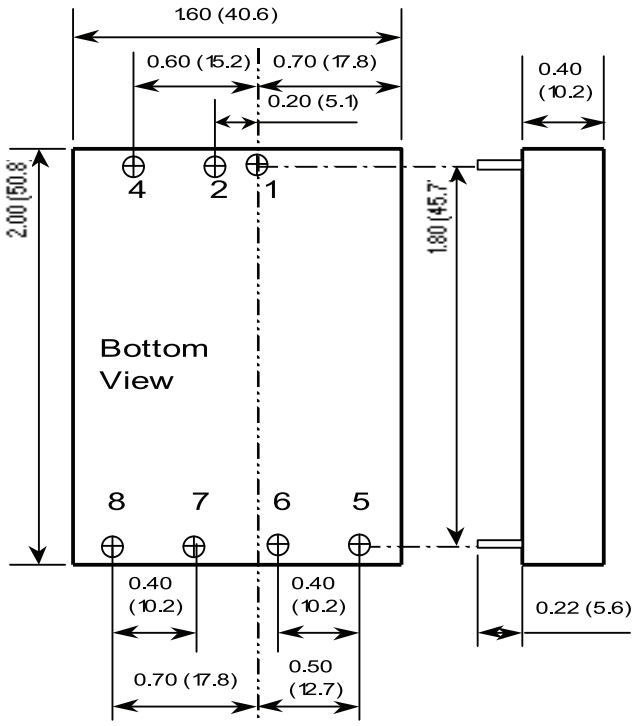
ITEMS		PXE20	PXE30
Max Output Power		20W	30W
Voltage Accuracy		±2%	±1%
Voltage Adjustment		±10%	
Minimum Load, each output	(1)	10%	None
Line Regulation		±0.2% for single, ±0.5% for dual	
Load Regulation (25% to 100%)		Single ±0.5%, Dual ±3%	Single ±0.5%, Dual ±1%
Cross Regulation (25% to 100%)		Dual ±5%	
Ripple and Noise (P-P)		Single: 75mV; Dual: 100mV	
Start up time		20ms typ.	25ms typ.
Remote on/off	(3)	Positive Logic: ON: Open or 3.5-12V, OFF Short or <1.2V	
Temperature Coefficient		<±0.02%/°C	
Operating Temperature		-40°C to +85°C	
Maximum Case Temperature		+100°C	
Storage Temperature		-55°C to +105°C	
Thermal Shock		MIL-STD-810D	
Relative Humidity (non condensing)		5 to 95%	
Transient Response (25% step load change)		500μs recovery	300μs recovery
Overvoltage Protection (Zener clamp)		3.3V: 3.9V, 5V: 6.2V, 12V: 15V, 15V: 18V	
Overcurrent and Short Circuit Protection		Typically at 150%, hiccup with self recovery	
Input Surge Voltage (Maximum for 100ms)		12V input: 36V, 24V input: 50V, 48V input: 100V	
Reflected input ripple (peak to peak)	(2)	25mA	30mA
Isolation Voltage		1600VDC minimum (Input-Output, Input-Case)	
Isolation Resistance		10^9 Ω minimum	
Isolation Capacitance (max)		300pF	1000pF
Typical Switching Frequency (Fixed)		300kHz	
MTBF (BELLCORE TR-NWT-000332)		1,976,000 hours	1,535,000 hours
Vibration		10 - 55Hz, 2G, 30 minutes each X, Y, Z axis	
Conducted and Radiated Emissions		EN55022 Level A	
Immunity		EN61000-4-2, -3, -4, -5, -6 Pref Criteria 2	
Safety Agency Approval		IEC606950, UL1950, EN60950, CE Mark (48V input only)	
Size mm (L x W x H)		50.8 x 40.6 x 10.2	
Weight (g)		48	
Warranty (yrs)		2	

Notes: (1) To meet regulation & noise specifications. Operation at zero load will not damage the device.
(2) 12μH source impedance in series with + input
(3) Max sink current 20mA (PXE20), 2.5mA (PXE30); The on/off pin is referenced to the negative input

Model Selector

Output Volt (V)	Output Curr (A)	Output Power (W)	Input Volt (VDC)	Model	Efficiency (%)
Single Outputs					
1.5	8.0	30	10 - 40	PXE30-24WS1P5	80
1.5	8.0	30	18 - 75	PXE30-48WS1P5	80
1.8	8.0	30	10 - 40	PXE30-24WS1P8	83
1.8	8.0	30	18 - 75	PXE30-48WS1P8	83
2.5	8.0	30	10 - 40	PXE30-24WS2P5	85
2.5	8.0	30	18 - 75	PXE30-48WS2P5	86
3.3	6.0	18	9 - 18	PXE30-12S3P3	85
3.3	6.0	18	18 - 36	PXE30-24S3P3	88
3.3	6.0	18	36 - 75	PXE30-48S3P3	87
3.3	6.0	30	10 - 40	PXE30-24WS3P3	87
3.3	6.0	30	18 - 75	PXE30-48WS3P3	87
3.3	6.0	30	10 - 40	PXE30-24WS2P3	87
5	4.0	20	9 - 36	PXE20-24WS05	79
5	4.0	20	18 - 75	PXE20-48WS05	80
5	6.0	30	9 - 18	PXE30-12S05	87
5	6.0	30	18 - 36	PXE30-24S05	88
5	6.0	30	36 - 75	PXE30-48S05	89
5	6.0	30	10 - 40	PXE30-24WS05	87
5	6.0	30	18 - 75	PXE30-48WS05	88
12	1.67	20	9 - 36	PXE20-24WS12	81
12	1.67	20	18 - 75	PXE20-48WS12	81
12	2.5	30	9 - 18	PXE30-12S12	88
12	2.5	30	18 - 36	PXE30-24S12	89
12	2.5	30	36 - 75	PXE30-48S12	90
12	2.5	30	10 - 40	PXE30-24WS12	87
12	2.5	30	18 - 75	PXE30-48WS12	87
15	1.33	20	9 - 36	PXE20-24WS15	81
15	1.33	20	18 - 75	PXE20-48WS15	81
15	2.0	30	9 - 18	PXE30-12S15	88
15	2.0	30	18 - 36	PXE30-24S15	89
15	2.0	30	36 - 75	PXE30-48S15	90
15	2.0	30	10 - 40	PXE30-24WS15	88
15	2.0	30	18 - 75	PXE30-48WS15	88
Dual Outputs					
±5	±2.0	20	9 - 36	PXE20-24WD05	79
±5	±2.0	20	18 - 75	PXE20-48WD05	79
±12	±0.833	20	9 - 36	PXE20-24WD12	81
±12	±0.833	20	18 - 75	PXE20-48WD12	83
±12	±1.25	30	9 - 18	PXE30-12D12	87
±12	±1.25	30	18 - 36	PXE30-24D12	88
±12	±1.25	30	36 - 75	PXE30-48D12	88
±12	±1.25	30	10 - 40	PXE30-24WD12	84
±12	±1.25	30	18 - 75	PXE30-48WD12	85
±15	±0.666	20	9 - 36	PXE20-24WD15	82
±15	±0.666	20	18 - 75	PXE20-48WD15	84
±15	±1.0	30	9 - 18	PXE30-12D15	87
±15	±1.0	30	18 - 36	PXE30-24D15	88
±15	±1.0	30	36 - 75	PXE30-48D15	88
±15	±1.0	30	10 - 40	PXE30-24WD15	85
±15	±1.0	30	18 - 75	PXE30-48WD15	86

Outline Drawing PXE Series

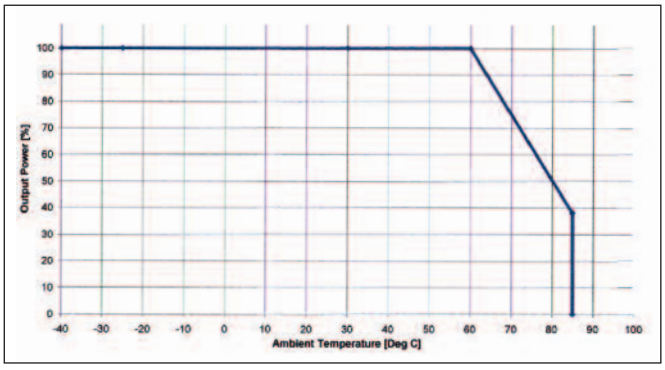


1. All dimensions in Inches (mm)
2. Pin pitch tolerance ±0.014(0.35)

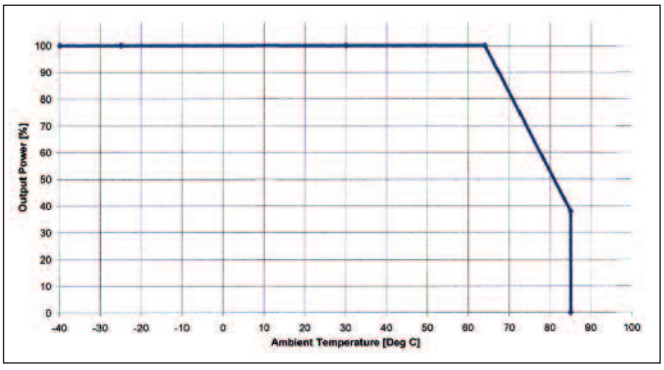
Pinout

PIN #	Function	
	Single Output	Dual Output
1	+ Input	+ Input
2	- Input	- Input
4	Remote on/off	Remote on/off
5	No Pin	+ Output
6	+ Output	Common
7	- Output	- Output
8	Trim	Trim

Derating Curve PXE20 Series



Derating Curve PXE30 Series



- Industry Standard 2" x 2" Footprint
- Six Sided Shielding
- Agency Approved
- 12, 24 and 48V Inputs
- 4:1 Wide Range Input Models

Key Market Segments & Applications

Telecom
Datacom
Point of Load

PXF Series

Single, Dual, Triple Output 40W & 60W
DC-DC Converters

PXF Features and Benefits

Features	Benefits
• UL, CSA, EN, CE Approvals	• Easier System Approvals
• Wide Range Input	• Less Parts to Inventory
• Six Sided Shielding	• Reduced Radiated Noise

Specifications

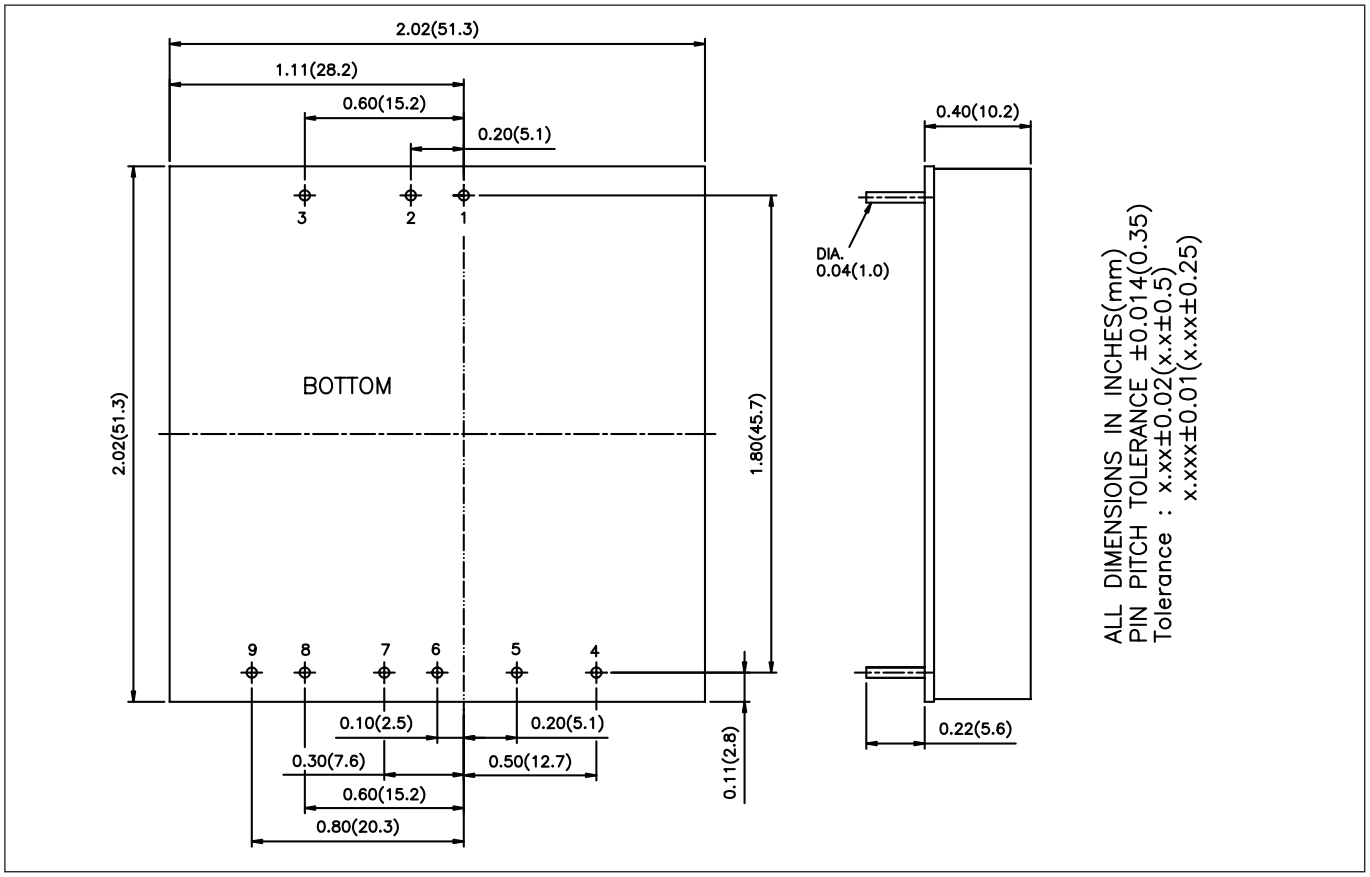
ITEMS		PXF
Maximum Output Power		40W or 60W
Voltage Accuracy (Full Load, Nom. Vin)		Single, Dual and Triple Main ±1%, Triple Auxiliaries ±5%
Voltage Adjustment	(1)	±10% (Single and Dual Output Only)
Minimum Load, each output	(2)	Single Output = 0%, Dual and Triple = 10% of full load rating
Line Regulation		Single / Dual ±0.5%, Triple (main) ±1%, Triple (auxiliary) ±5%
Load Regulation (10% to 100%)	(3)	Single ±0.5%, Dual ±1%, Triple (main) ±2%, Triple (auxiliary) ±5%
Cross Regulation (25% to 100%)	(4)	Triple (main) ±1%, Dual/Triple (auxiliary) ±5%
Start up time		PXF40: 25ms typ., PXF40xxW, PXF60: 20ms max.
Remote on/off (referenced to negative input)		Positive Logic: ON: Open or 3.0-12V, OFF Short or <1.2V
Temperature Coefficient		<±0.02%/°C
Operating Temperature		See derating curves
Maximum Case Temperature		PXF40: +100°C, PXF40-xxW +105°C, PXF60 +110°C
Storage Temperature		PXF40: -55°C to +105°C, PXF40xxW, PXF60 +125°C
Thermal Shock		MIL-STD-810F
Relative Humidity (non condensing)		5 to 95%
Transient Response (25% step load change)		250μs recovery
Overvoltage Protection (Zener clamp)		Typical 3.3V: 3.9V, 5V: 6.2V, 12V: 15V, 15V: 18V
Overcurrent and Short Circuit Protection		Typically at 150%, hiccup with self recovery
Input Surge Voltage (Maximum for 100ms)		12V input: 36V, 24V input: 50V, 48V input: 100V
Reflected input ripple (peak to peak)	(6)	PXF40: 40mA, PXF40xxW, PXF60: 20mA
Isolation Voltage		Input - Output, Input to Case: 1600VDC minimum
Isolation Resistance		10^9 Ω minimum
Isolation Capacitance (max)		PXF40, PXF60: 1000pF, PXF40xxW: 2500pF
Switching Frequency (Fixed)		300kHz (typ.)
MTBF (BELLCORE TR-NWT-000332)		PXF40: 1,398,000; PXF40xxW: 1,105,000, PXF60: 1.093,000 hours
Vibration		10 - 55Hz, 10G, 30 minutes each X, Y, Z axis
Conducted and Radiated Emissions		EN55022 Level A, see installation manual
Immunity		EN61000-4-2, -3, -4, -5, -6
Safety Agency Approval		IEC60950-1, UL60950-1, EN60950-1, CE Mark (48V input only)
Size mm (L x W x H)		50.8 x 50.8 x 10.1
Weight (g)		60
Warranty (yrs)		2

(1) Maximum output deviation is 10% inclusive of remote sense and trim. If remote sense is not being used, the +Sense and - Sense should be connected to their corresponding outputs; + output, - output.
(2) Dual and Triple output models require a minimum load of 10% on the output to maintain specified regulation. No load operation will not damage the device.
(3) Load regulation for triple output: Main output:10-100%, with 10-100% balanced load on auxiliaries. Auxiliary outputs: 10% to 100% balanced on all outputs.
(4) Cross regulation for dual output: asymmetrical load 25% / 100% full load. Cross regulation for triple output: Main output 100% load, auxiliary 100%, other auxiliary 25% to 100%. Auxiliary outputs: main output 100% load, auxiliary 100%, other auxiliary 25% to 100% or main output 25%, auxiliary 25%, other auxiliary 25% to 100%.
(5) An external filter capacitor is required for normal operation. The capacitor should be capable of handling a 1A ripple current for 48V and 24V models.
(6) Simulated Source impedence of 12μH placed in series with + input.

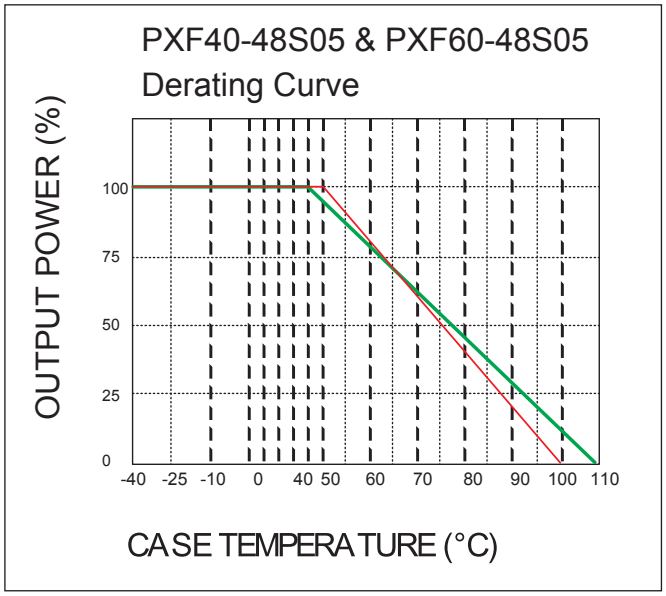
Model Selector

Output Volt(V)	Output Curr(A)	Input Volt(VDC)	Model	Ripple/Noise (mV)	Efficiency (%)	Max Load Cap(uF))
Single Outputs						
3.3	8	9 - 18	PXF40-12S3P3	50	84	21000
3.3	10	9 - 36	PXF40-24WS3P3	50	86	25750
3.3	8	18 - 36	PXF40-24S3P3	50	87	21000
3.3	10	18 - 75	PXF40-48WS3P3	50	86	25750
3.3	14	18 - 36	PXF60-24S3P3	75	89	36000
3.3	8	36 - 75	PXF40-48S3P3	50	88	21000
3.3	14	36 - 75	PXF60-48S3P3	75	89	36000
5	8	9 - 18	PXF40-12S05	50	86	13600
5	8	9 - 36	PXF40-24WS05	50	87	13600
5	8	18 - 36	PXF40-24S05	50	89	13600
5	8	18 - 75	PXF40-48WS05	50	88	13600
5	8	36 - 75	PXF40-48S05	50	90	13600
5	12	18 - 36	PXF60-24S05	75	90	20400
5	12	36 - 75	PXF60-48S05	75	90	20400
12	3.333	9 - 18	PXF40-12S12	75	86	2360
12	3.333	9 - 36	PXF40-24WS12	75	87	2360
12	3.333	18 - 36	PXF40-24S12	75	88	2360
12	3.333	18 - 75	PXF40-48WS12	75	87	2360
12	3.333	36 - 75	PXF40-48S12	75	89	2360
12	5	18 - 36	PXF60-24S12	100	90	3550
12	5	36 - 75	PXF60-48S12	100	90	3550
15	2.666	9 - 18	PXF40-12S15	75	87	1510
15	2.666	9 - 36	PXF40-24WS15	75	87	1510
15	2.666	18 - 36	PXF40-24S15	75	89	1510
15	2.666	18 - 75	PXF40-48WS15	75	87	1510
15	2.666	36 - 75	PXF40-48S15	75	89	1510
15	4	18 - 36	PXF60-24S15	100	90	2300
15	4	36 - 75	PXF60-48S15	100	90	2300
Dual Outputs						
±12	±1.667	9 - 36	PXF40-24WD12	120	86	±1200
±12	±1.8	9 - 18	PXF40-12D12	120	85	±1200
±12	±1.8	18 - 36	PXF40-24D12	120	87	±1200
±12	±1.667	18 - 75	PXF40-48WD12	120	86	±1200
±12	±1.8	36 - 75	PXF40-48D12	120	87	±1200
±15	±1.333	9 - 36	PXF40-24WD15	150	86	±750
±15	±1.4	9 - 18	PXF40-12D15	150	85	±750
±15	±1.4	18 - 36	PXF40-24D15	150	87	±750
±15	±1.333	18 - 75	PXF40-48WD15	150	86	±750
±15	±1.4	36 - 75	PXF40-48D15	150	87	±750
Triple Outputs						
3.3V,±12V	6.0,±0.4	9 - 18	PXF40-12T3312	50 / 75	83	13000,±330
3.3V,±12V	6.0,±0.4	18 - 36	PXF40-24T3312	50 / 75	85	13000,±330
3.3V,±12V	6.0,±0.4	36 - 75	PXF40-48T3312	50 / 75	86	13000,±330
5V,±12V	6.0,±0.4	9 - 18	PXF40-12T0512	50 / 75	85	6800, ±330
5V,±12V	6.0,±0.4	18 - 36	PXF40-24T0512	50 / 75	87	6800, ±330
5V,±12V	6.0,±0.4	36 - 75	PXF40-48T0512	50 / 75	88	6800, ±330
5V, ±15V	6.0, ±0.3	9 - 18	PXF40-12T0515	50/75	86	6800, ±110
5V, ±15V	6.0, ±0.3	18 - 36	PXF40-24T0515	50/75	87	6800, ±110
5V, ±15V	6.0, ±0.3	36 - 75	PXF40-48T0515	50/75	88	6800, ±110

Outline Drawing PXF Series



Derating Curve PXF40 Series



Pinout

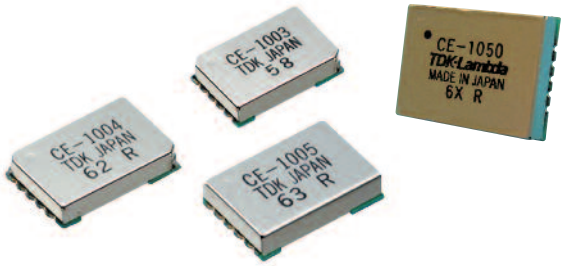
PIN#	Single O/P	Function Dual O/P	Triple O/P
1	+ Input	+ Input	+ Input
2	- Input	- Input	- Input
3	Remote on/off	Remote on/off	Remote on/off
4	No Pin	No Pin	+ Aux
5	- Sense (Note 1)	+ VO	Common
6	+ Sense (Note 1)	Common	-Aux
7	+ Output	Common	+ Output
8	- Output	- VO	- Output (Com)
9	Trim	Trim	N/C

Heat Sink (5.58mm high)

7G0026A (includes thermal adhesive pad)

Non-isolated POL (point of load) PCB mount & Surface Mount DC-DC Converters

Point of Load converters from 1.5A to 20A output current with trimmable output voltage.
Preset fixed output voltage optional on some models.
Nominal 5V and nominal 12V wide input ranges on most models whilst the CE-1050 accepts up to 26.4V input.
Suitable for many distributed power architecture applications.



- 3 to 5V or 9 to 26V Input
- Outputs 1V to 12V
- Surface Mount
- Low 4.2mm to 5.5mm Profile
- Non Isolated Output

Key Market Segments & Applications

Telecommunications
Datacom
Instrumentation

CE Series

1.2 - 2.5A Point of Load Converters

CE Series Features and Benefits

Features	Benefits
• Wide range output	• Reduces need for custom models
• Constant switching frequency	• Easier system filtering
• Five sided shielding	• Reduced EMI

Specifications

ITEMS \ MODELS		CE-1003	CE-1004	CE-1005	CE-1050
Nominal Output Voltage VDC		1.5 to 3.3	3.3 to 5.0	1 to 3.3	(2) 3.3 tp 12.6
Input Voltage Range VDC		6 - 16		3 - 5.25	9 - 26.4
Input Current (max)	A	2.4			1.8
Ripple & Noise (typ) (pk - pk)	mV	100		50	
Total Regulation (max)	mV	±5%		±4%	±5%
Overload Protection (typ)	A	2		3	3.5
Remote On / Off (1)	-	ON = 2 - 6V; OFF= 0-0.6V		ON = <0.5V; OFF= >2V	ON = 3 -6V; OFF= 0-0.3V
Temperature (operating)	°C	-40°C to +85°C (CE1003, 80% load above 70°C)			-20°C to +85°C
Temperature (storage)	°C	-40°C to +85°C			-20°C to +85°C
Humidity (operating)	-	10 - 90% RH Non condensing @ max temp +38°C			
Humidity (storage)	-	Sealed packaging, see Technical Download			
Cooling	-	Convection or forced air			
Vibration (non operating)	-	Frequency: 10-2000Hz, Sweep time: 4 minutes per cycle			
		Amplitude: 10G, 30 minutes each x, y, and z direction			
Shock	-	Peak Acceleration: 100G, Duration: 6msec; three times each axis			
Weight (max)	g	1.8		1.7	3.7
Size	mm	18.3 x 12.3 x 4.2			21.3 x 16.4 x 5.5
Warranty	yrs	1			

Notes: (1) Pin 5
(2) Input / output voltage differential must be at least 4V.

Innovating Reliable Power TDK·Lambda

Model Selector

Model	Output Voltage (V)	Output Current (A)	Efficiency (typ)
CE-1003	1.5 - 3.3(2)	1.5	86.5%
CE-1004	3.3 - 5(2)	1.5	86.5%
CE-1005	1.0 - 3.3	2.5(3)	91.5%
CE-1050	3.3 - 12.6	2.5(4)	90.0%

Notes:

(2) See Programming Table
(3) See CE-1005 Derating Table
(4) See CE-1050 Derating Curves

CE-1005 Derating Table

Vout	3.3 Vin	5.0 Vin
1.0	1.75A	1.5A
1.2	1.85A	1.65A
1.5	2.00A	1.85A
1.8	2.15A	2.0A
2.0	2.25A	2.2A
2.5	2.50A	2.5A
3.3	-	2.5A

CC-1005 can be trimmed with external resistor

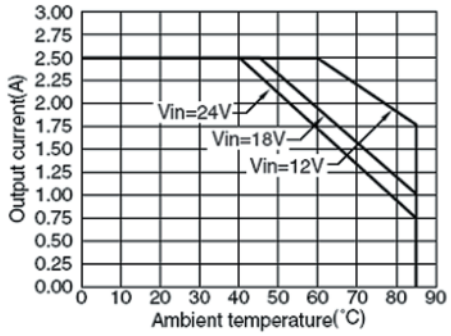
CE-1003, 1004 Programming Table

Pin 7	Pin 8	Pin 9	Output Voltage CE-1003	(Vout) CE-1004
0	0	0	3.3	5.0
0	0	1	3.0	4.8
0	1	0	2.8	4.5
0	1	1	2.5	4.3
1	0	0	2.3	4.0
1	0	1	2.0	3.8
1	1	0	1.8	3.5
1	1	1	1.5	3.3

0 = Short to GND 1 = Open
See web site for detailed specifications

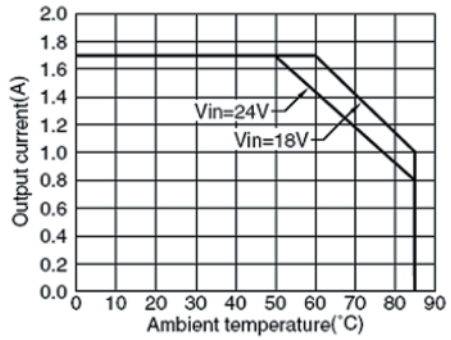
Derating Curve CE-1050 Series

Vout=3.3V



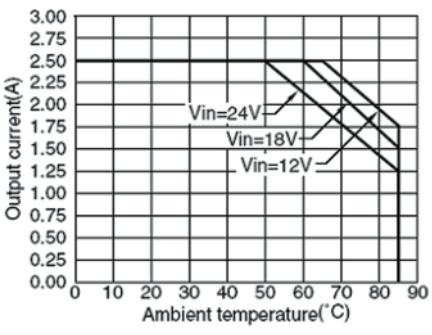
Vout=9.0V

Vout=9.0V



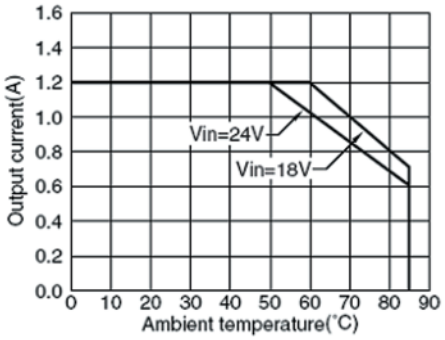
Vout=5.0V

Vout=5.0V

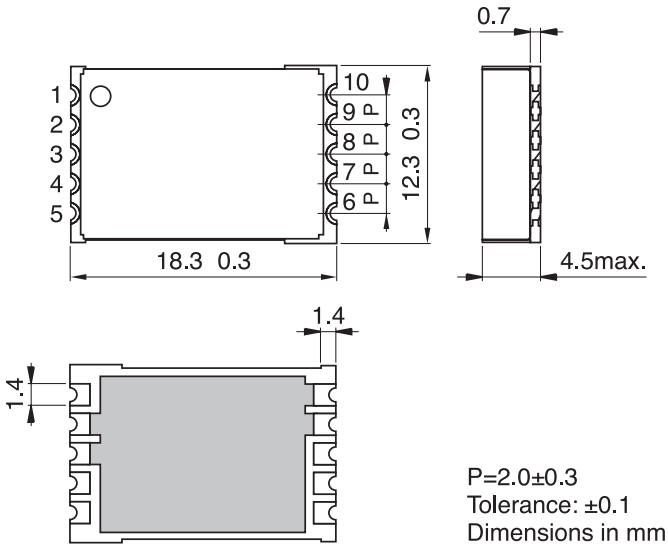


Vout=12V

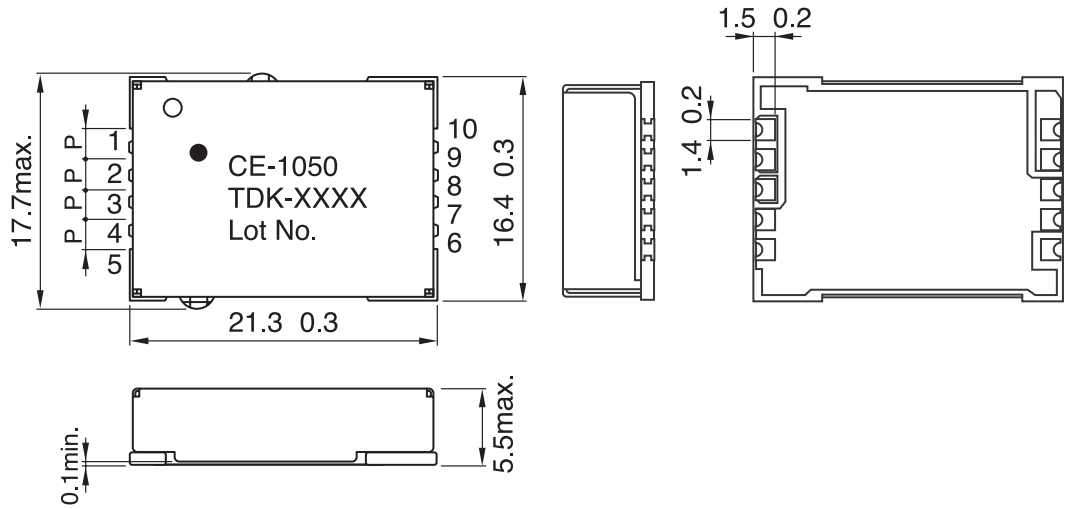
Vout=12V



Outline Drawing CE-1000 Series

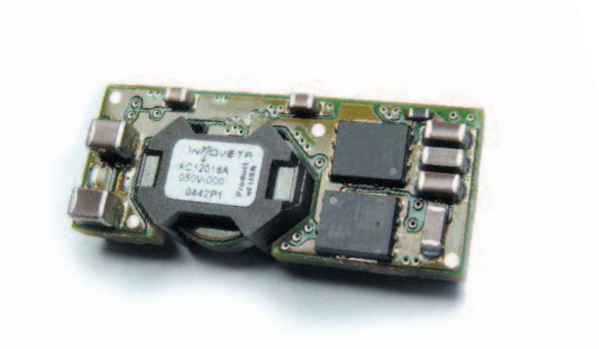


Outline Drawing CE-1050 Series



Pinout

Pin	CE-1003	CE-1004	CE-1005	CE-1050
1	Vin	Vin	Vin	Vin
2	Vin	Vin	Vin	Vin
3	GND	GND	GND	GND
4	GND	GND	GND	GND
5	On / Off	On / Off	On/Off	On/Off
6	GND	GND	GND	GND
7	Vs-0	Vs-0	GND	GND
8	Vs-1	Vs-1	Vset	Vset
9	Vs-2	Vs-2	Vout	Vout
10	Vout	Vout	Vout	Vout



- Standard Industry Footprint (DOSA)
- 3.0-5.5V and 6.0-14.0V Input
- 0.8-5.0V Nominal Outputs
- Surface Mount
- Low 8.5mm Profile
- Non Isolated Output

iAA/iAC Series

15 to 16A

Point of Load Converter

iAA / iAC Features and Benefits

Features	Benefits
• High operating efficiency (up to 95%)	• Reduced system heating
• Constant switching frequency	• Easier system filtering
• Starts with pre-biased output	• Supports complex digital systems

Specifications

ITEMS / MODEL		iAA05015A008V	iAA05015A025V	iAA05015A033V	iAC12016A008V
Nominal Output Voltage	VDC	0.75-3.63	2.5	3.3	0.8 - 5.0
Input Voltage Range	VDC	3.0-5.5 (2)	3.0-5.5 (2)	4.5-5.5	6.0(1) - 14
Input Current (max)	A		16		18
Output Voltage Tolerance	VDC	±3.3% Vo, set	2.413 - 2.588	3.19 - 3.41	-2.5 to +3.5% Vo, set
Ripple & Noise (max) (pk to pk) (3)	mV		75		100
Line Regulation (max)	mV		5		10
Load Regulation (max)	mV		10		15
Overload Protection	%	Inception - 175-235% of rated output; Short circuit - auto recovery			
Overvoltage Protection	-	N/A			
Remote Sense	-	Yes			
Remote On / Off	-	Positive or Negative Logic available, see Feature Set			
Sequencing	-	Not Available			See Feature Set
Temperature (operating)	°C	-40°C to +125°C			
Temperature (storage)	°C	-55°C to +125°C			
Humidity (operating)	-	20 - 95% RH Non condensing			
Humidity (storage)	-	Per IPC / JEDEC J-STD-020, for MSL-2 (<30C/60%RH) in original packaging			
Cooling	-	Convection or forced air			
Isolation Voltage	-	N/A			
Vibration (non operating)	-	5 to 50Hz @ 0.5g (4.9m/s^2), and 50 to 500Hz @ 1.5g (14.7m/s^2) per Bellcore TR-EOP-000063-5.4.4			
Shock	-	196.1m/s^2			
Safety Agency Approvals	-	UL60950 (US and Canada), VDE0805 (IEC60950), CB scheme (IEC60950)			
Weight (max)	g	12			
Size	mm	33 x 13.5 x 8.5			
Warranty	yrs	3			

Notes:

(1) 8.3 - 14V when output is >3.63V

(2) 4.5 - 5.5V when output is >3.0V

(3) Measured across one 0.1μF ceramic capacitor and one 47μF ceramic capacitor; BW = 20MHz

Model Selector

Model	Voltage Voltage (V)	Adjust Adjust (V)	Output Curr. (A)	Max. Output Power (W)	Efficiency at Full Load (%)
iAA05015A008V-000-R	0.75 - 3.63	0.75 - 3.63	15	49.5	94.5
iAA05015A008V-001-R	0.75 - 3.63	0.75 - 3.63	15	49.5	94.5
iAC12016A008V-000-R	0.8 - 5.0	0.8 - 5.0	16	80	94
iAC12016A008V-001-R	0.8 - 5.0	0.8 - 5.0	16	80	94
iAC12016A008V-002-R	0.8 - 5.0	0.8 - 5.0	16	80	94
iAC12016A008V-003-R	0.8 - 5.0	0.8 - 5.0	16	80	94

NB other configurations on request

Feature Set

	Feature Set	Pos. Logic On / Off	Neg. Logic On / Off	Input Voltage	Sequencing
iAA	00	X			
	01*		X		
iAC	00	X		6.0 - 14.0	X
	01*		X	6.0 - 14.0	X
	02	X		6.0 - 14.0	
	03		X	6.0 - 14.0	

* Preferred feature set

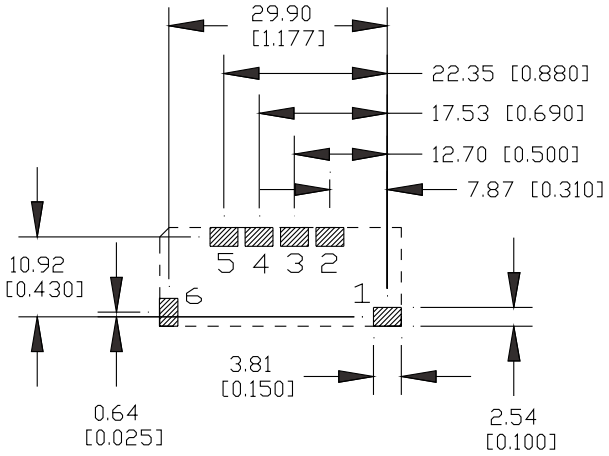
Model Number Example: iAC12016A008V-0**01**-R

Pinout

PIN	iAA	Function iAC(Seq)	iAC(No Seq)
1	Vin	On/Off	On/Off
2	Gnd	Vin	Vin
3	Vout	Seq	Gnd
4	Trim	Gnd	Vout
5	Sense	Vout	Trim
6	On/Off	Trim	Sense
7	-	Sense	-

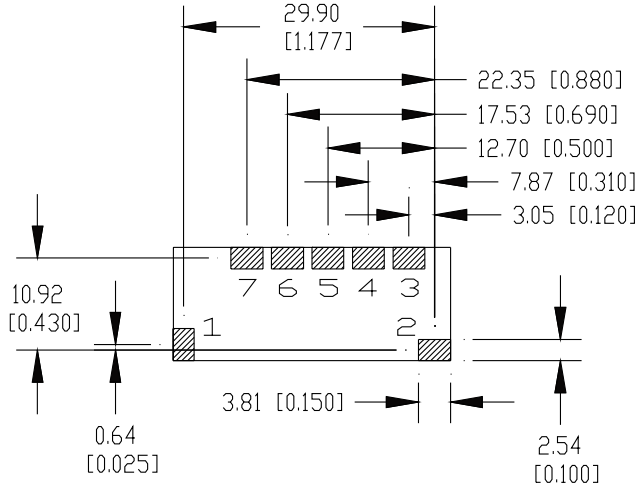
Recommended Footprint (Top View) iAA/iAC (no sequence) Series

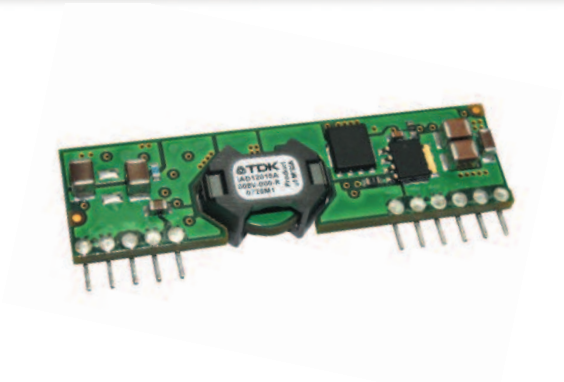
iAA/iAC
(no sequence)



Recommended Footprint (Top View) iAC Series

iAC
(sequence)





- Standard DOSA SIP Footprint
- 6.0-14VDC Input
- 0.8-5.5V Outputs
- Through Hole Mounting
- Low 13.97mm Profile
- Non Isolated Output

iAD Series

16A Point of Load Converters

iAD Features and Benefits

Features	Benefits
• High operating efficiency (up to 94%)	• Reduced system heating
• Constant switching frequency	• Easier system filtering
• Starts with pre-biased output	• Supports complex digital systems

Specifications

ITEMS \ MODEL		iAD
Nominal Output Voltage	VDC	0.8 - 5.5V
Input Voltage Range	VDC	6 - 14V
Input Current (max)	A	18A
Output Voltage Tolerance	VDC	N/A
Ripple & Noise (max) (pk-pk)	mV	100
Line Regulation (max)	mV	15
Load Regulation (max)	mV	22
Overload Protection	%	Inception - 28A; Short circuit - auto recovery
Overvoltage Protection	-	N/A
Remote Sense	-	Yes
Remote On / Off	-	Positive or Negative Logic available, see Feature Set
Sequencing	-	Yes, see feature set
Temperature (operating)	°C	-40°C to +125°C
Temperature (storage)	°C	-55°C to +125°C
Humidity (operating)	-	20 - 95% RH Non condensing
Humidity (storage)	-	10 - 95% RH Non condensing
Cooling	-	Convection or forced air
Isolation Voltage	-	none
Vibration (non-operating)	-	5 to 50Hz@0.5g (4.9m/s^2), & 50 to 500Hz@1.5g (14.7m/s^2) per Bellcore TR-EOP-000063-5.4.4
Shock	-	196.1m/s^2
Safety Agency Certifications	-	UL60950 (US and Canada), VDE0805 (IEC60950), CB scheme (IEC60950)
Weight (max)	g	12
Size (LxWxH)	mm	50.8 x 7.9 x 14
Warranty	yrs	3

Innovating Reliable Power TDK·Lambda

Model Selector

Model	Output Voltage (V)	Output Adjust (V)	Output Curr. (A)	Max. Output Power (W)	Efficiency at Full Load (%)
iAD12016A008V-000-R	0.80 - 5.5	0.80 - 5.5	16	80	94% at 5V
iAD12016A008V-001-R	0.80 - 5.5	0.80 - 5.5	16	80	94% at 5V

NB other configurations on request

Feature Set

Feat. Set	Pos. Logic On / Off	Neg. Logic On / Off	Input Voltage	Seq.	0.13" Pin	0.2" Pin
00*	X		6 - 14V	X	X	
01		X	6 - 14V	X	X	
02	X		6 - 14V		X	
03		X	6 - 14V		X	
04	X		6 - 14V	X		X
05		X	6 - 14V	X		X
06	X		6 - 14V			X
07		X	6 - 14V			X

* Preferred feature set

Model Number Example: iAD12016A008V-0**01**-R

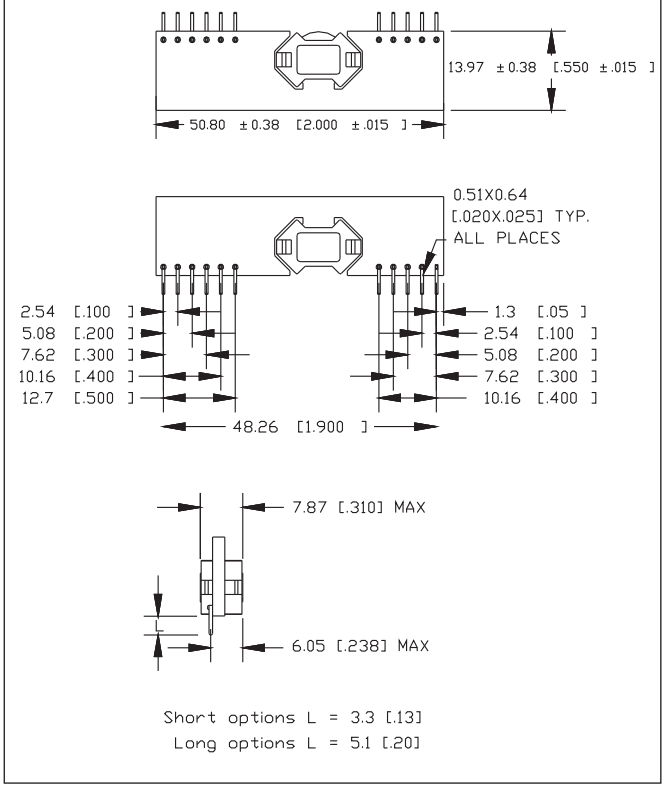
Pinout

PIN	Function	PIN	Function
1	Vout	6	GND
2	Vout	7	Vin
3	Sense	8	Vin
4	Vout	9	Sequencing
5	GND	10	Trim
		11	On / Off

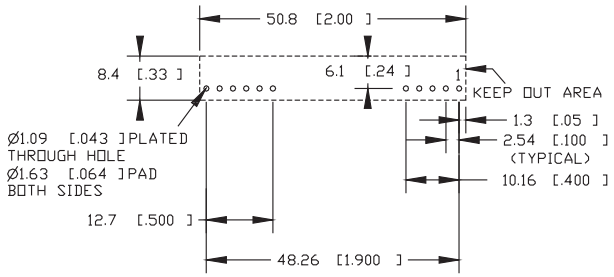
Outline Drawing iAD Series

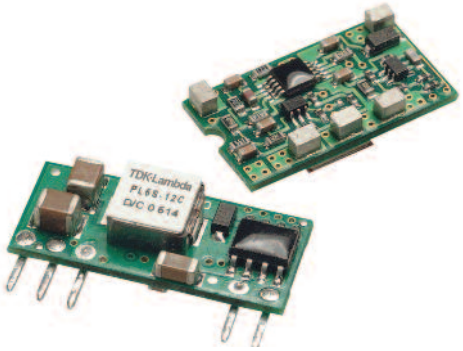
Mechanical Specifications:

Dimensions are in mm [in]. Unless otherwise specificed tolerances are: x.x ±0.5 [0.02], x.xx ±0.25 [0.010]



Recommended Hole Pattern (Top View)





- Industry Standard Package and Pin Out
- DOSA Compatible Models
- Low Voltage Outputs to 0.75V
- Pin and SMT Versions
- Output Voltage Adjustment
- Remote On/Off

PL5 Series

5A Non-Isolated
DC-DC Converters

Key Market Segments & Applications

Telecommunications
Data Communications
Networking Equipment
Test Equipment
Industrial Electronics
Distributed Power Architecture

PL5 Features and Benefits

Features	Benefits
• High Efficiency up to 94%	• Reduces Input Current Draw
• Wide Output Voltage Adjustment Range	• Stock One Part for all Voltages
• SMT or Through Hole Packages	• Multiple Mounting Methods
• Industry Standard Pin Out	• Second Sourcing

Specifications

ITEMS / MODEL			PL5S-05C	PL5SMS-05C	PL5S-12C	PL5SMS-12C
Output Voltage Range	(2)	VDC	0.75 - 3.3VDC		0.75 - 5.0VDC	
Output Current		A	5 Amps			
Output Voltage Accuracy		%	±1.5%			
Turn on/off Threshold (typ)		VDC	On: 2.0V, Off: 1.9V		On: 8.0V, Off: 7.9V	
Ripple & Noise (Typ)	(1)	mV	20mV rms, 50mV pk-pkVo=5VDC, 45mV rms, 75mV pk-pk			
Line Regulation (Typ)		%	± 0.4% (Vo=3.3V)		± 0.2% (Vo=3.3V)	
Load Regulation (Typ)		%	± 0.5% (Vo=3.3V)			
Capacitive Load (max)		µF	3000µF			
Transient Response		-	<200µs settling time for 25% load change			
Overcurrent Protection		-	Continuous			
Overvoltage Protection		-	N/A			
Over Temp. Protection		°C	120°C typ.			
Remote Sense		-	N/A			
Remote On / Off		-	On: Vin or open circuit; Off: <0.4VDC			
Operating Temperature		°C	-40°C to +85°C			
Operating Humidity		%	20 - 95% Non condensing			
Storage Temperature		°C	-55°C to +125°C			
Storage Humidity		%	10 - 95% Non condensing			
Cooling		-	Convection, or forced air			
Vibration (non operating)		-	10 - 500 -10 Hz, amplitude 1.524mm, X, Y, Z 6 minutes each			
Shock			half sine wave, 40g, 11ms, 3 times each axis, +X, -X, +Y, -Y, +Z, -Z			
Safety Agency Approvals		-	UL/C-UL60950			
Switching Frequency		kHz	300kHz			
Weight (Typ)		g	2.1	2.4	2.1	2.4
Size (W x L x H)		-	See outline drawing			
Warranty		yrs	2			

Note: See Installation Manual for full details, test methods of parameters and application notes

(1) The output noise is measured with a 10µF tantalum cap and 1µF ceramic cap across output (2) See application notes for Trim equations and tables

Innovating Reliable Power TDK·Lambda

Model Selector

Model	Input Voltage (VDC)	Output Voltage (VDC)	Output Curr. (A)	Input Current* No Load (mA)	Input Current* Full Load (mA)	Eff. (%)
	3.0 - 5.5	0.75	5	25	949	79
	3.0 - 5.5	1.2	5	30	1412	85
	3.0 - 5.5	1.5	5	30	1724	87
PL5S-05C and	3.0 - 5.5	1.8	5	35	2022	89
PL5SMS-05C	3.0 - 5.5	2	5	35	2222	90
	3.0 - 5.5	2.5	5	35	2217	92
	4.5 - 5.5	3.3	5	35	3511	94
	8.3 - 14	0.75	5	20	428	73
	8.3 - 14	1.2	5	25	625	80
	8.3 - 14	1.5	5	25	762	82
PL5S-12C and	8.3 - 14	1.8	5	30	893	84
PL5SMS-12C	8.3 - 14	2	5	30	980	85
	8.3 - 14	2.5	5	35	1197	87
	8.3 - 14	3.3	5	45	1545	89
	8.3 - 14	5.0	5	50	2264	92

PL5S - SIL 5 pins
PL5SMS - Surface Mount

* At nominal input voltage (5V or 12V depending on model)

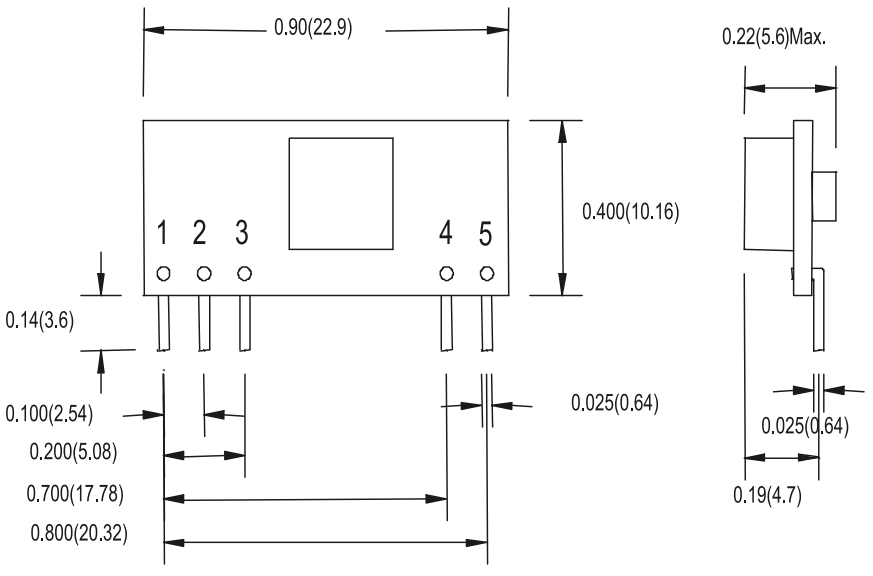
Remote On /Off Option

Suffix	Function
Blank	On: Vin or open circuit; Off<0.4DC
N	On: open circuit or <0.4VDC; Off: >2.8VDC to Vin

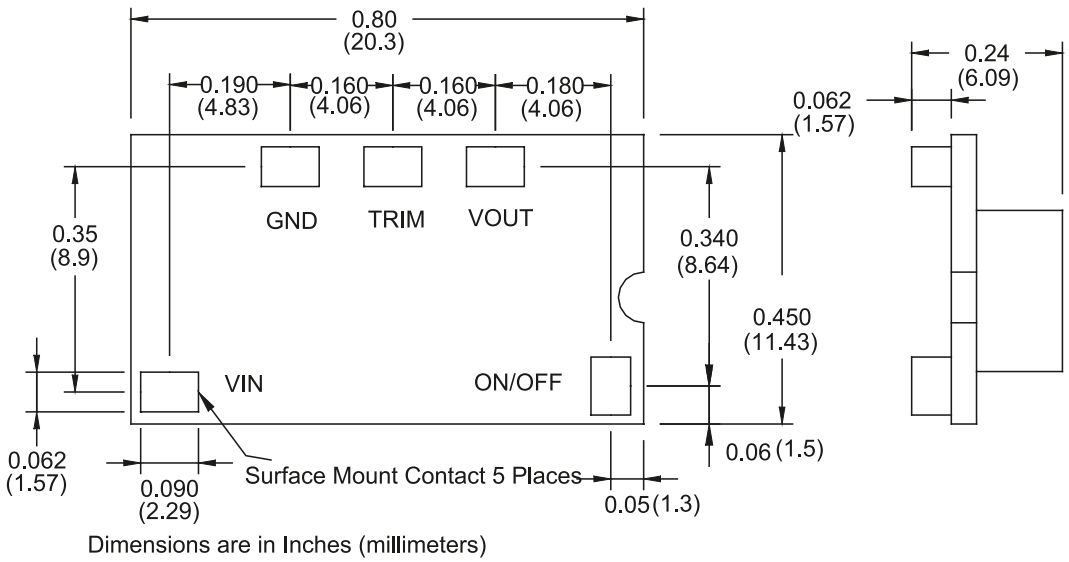
Pinout

PIN	Function	PIN	Function
1	+ Output	2	Trim
3	Common	4	+V Input
5	On/Off		

Outline Drawing PL5S Series

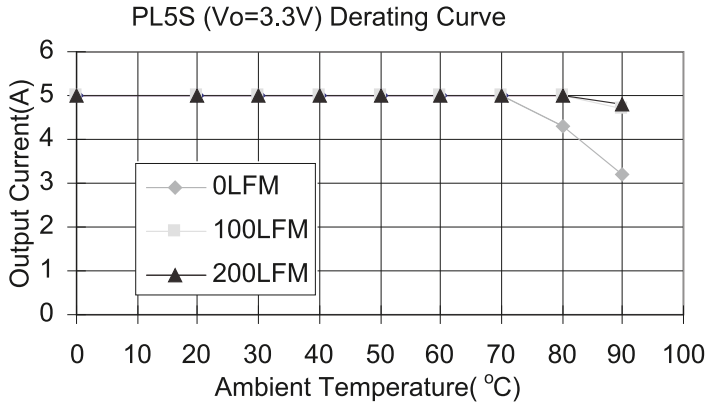


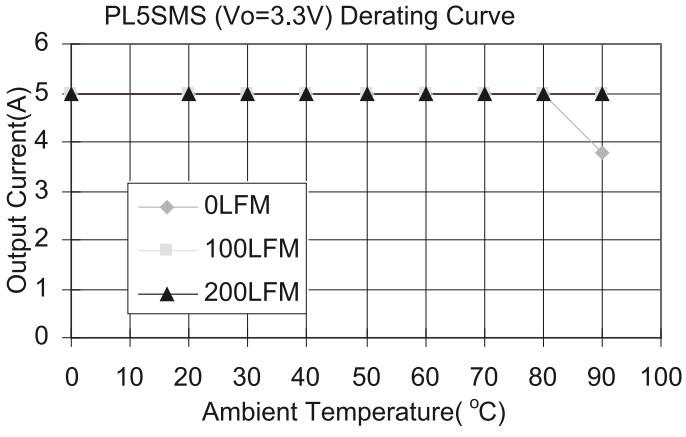
Outline Drawing PL5SMS Series

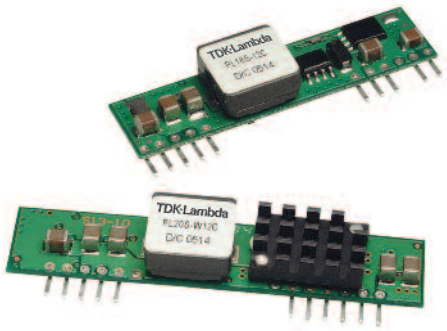


Dimensions are in Inches (millimeters)

Derating Curve







- Industry Standard Package and Pin Out
- DOSA Compatible Models
- Low Voltage Outputs to 0.75V
- Wide Input Range 6 to 14V ('W' Models)
- Output Voltage Adjustment
- Remote On/Off and Sequencing ('W' Models)

PL10-20S Series

10-20A Non-Isolated
DC-DC Converters

Key Market Segments & Applications

Distributed Power Architecture
Telecommunications
Data Communications
Networking Equipment
Test Equipment
Industrial Electronics

PL10-20S Features and Benefits

Features	Benefits
• High Efficiency up to 95%	• Reduces Input Current Draw
• Wide Output Voltage Adjustment Range	• Stock One Part for all Voltages
• Through Hole Packages	• Less PCB Space Used
• Industry Standard Pin Out	• Second Sourcing

Specifications

ITEMS / MODEL			PL10S-W12C	PL10S-12	PL16S-12C	PL16S-W12C	PL20S-W12C
Output Voltage Range	(2)	VDC	0.75 - 5.0VDC				
Output Current		A	10		16		20
Output Voltage Accuracy		%	±1.5% max.				
Turn on/off Threshold (typ)		VDC	On: 5.0V, Off: 4.0V	On: 8.0V, Off: 7.7V		On: 5.0V, Off: 4.0V	
Ripple & Noise (Typ)	(2)	mV	20mV rms, 75mV pk-pk		30mV rms, 75mV pk-pk		
Line Regulation (Typ)		%	± 0.2% (Vo=3.3V)				
Load Regulation (Typ)		%	±0.5% (Vo=3.3V)				
Capacitive Load (max)		µF	8000µF				
Transient Response		-	<200µs settling time for 25% load change				
Overcurrent Protection		-	Continuous				
Overvoltage Protection		-	N/A				
Over Temp. Protection		°C	+120°C typ.		+130°C typ.		
Remote Sense		-	Yes				
Remote On / Off		-	On: Vin or open circuit; Off: <0.4VDC				
Power Good Signal (logic high)		%	Optional	N/A		Optional	
Operating Temperature		°C	-40°C to +85°C				
Operating Humidity		%	20 - 95% Non condensing				
Storage Temperature		°C	-55°C to +125°C				
Storage Humidity		-	10 - 95% Non condensing				
Cooling		-	Convection, or forced air				
Vibration (non operating)		-	10 - 500 - 10Hz, amplitude 1.524mm, X, Y, Z 6 minutes each				
Shock		-	Half sine wave, 40g, 11ms, 3 times each axis, +X, -X, +Y, -Y, +Z, -Z				
Safety Agency Approvals		-	UL/C-UL60950				
Sequencing/Tracking		-	Yes	-		Yes	
Switching Frequency		kHz	300kHz				
Weight (Typ)		g	8.0	10.0	8.0	8.5	10.1
Size (WxHxD)		-	See outline drawing				
Warranty		yrs	2				

Note: See Installation Manual for full details, test methods of parameters and application notes

(1) The output noise is measured with a 10µF tantalum cap and 1µF ceramic cap across output (2) See application notes for Trim equations and tables

Model Selector

Model	Input Voltage (VDC)	Output Voltage (VDC)	Output Curr. (A)	No Load (mA)	Full Load (mA)	Eff. (%)
PL10S-W12C	6.0 - 14	0.75	10	40	762	82
	6.0 - 14	1.2	10	40	1149	87
	6.0 - 14	1.5	10	50	1404	89
	6.0 - 14	1.8	10	40	1666	90
	6.0 - 14	2.0	10	60	1832	91
	6.0 - 14	2.5	10	65	2264	92
	6.0 - 14	3.3	10	75	2956	93
	6.5 - 14	5.0	10	95	4386	95
PL10S-12-1V0	9.0 -14	1.0	10	50	992	84
PL10S-12-1V2	9.0 -14	1.2	10	50	1163	86
PL10S-12-1V5	9.0 -14	1.5	10	50	1404	89
PL10S-12-1V8	9.0 -14	1.8	10	60	1666	90
PL10S-12-2V0	9.0 -14	2.0	10	60	1832	91
PL10S-12-2V5	9.0 -14	2.5	10	70	2264	92
PL10S-12-3V3	9.0 -14	3.3	10	70	2956	93
PL10S-12-5V0	9.0 -14	5.0	10	70	4385	95
PL10S-12-C	8.3 -14	0.75-5.0	10	70	4385	95
PL16S-12C	9.0 -14	0.75	16	40	1299	77
	9.0 -14	1.2	16	50	1928	83
	9.0 -14	1.5	16	50	2326	86
	9.0 -14	1.8	16	60	2727	88
	9.0 -14	2.0	16	60	2996	89
	9.0 -14	2.5	16	65	3704	90
	9.0 -14	3.3	16	75	4783	92
	9.0 -14	5.0	16	75	7092	94
PL16S-W12C	6.0 - 14	0.75	16	40	1250	80
	6.0 - 14	1.2	16	40	1882	85
	6.0 - 14	1.5	16	50	2273	88
	6.0 - 14	1.8	16	60	2697	89
	6.0 - 14	2.0	16	60	2963	90
	6.0 - 14	2.5	16	65	3663	91
	6.0 - 14	3.3	16	75	4731	93
	6.5 - 14	5.0	16	95	7092	94
PL20S-W12C	6.0 - 14	0.75	20	40	1603	78
	6.0 - 14	1.2	20	50	2381	84
	6.0 - 14	1.5	20	50	2874	87
	6.0 - 14	1.8	20	50	3409	88
	6.0 - 14	2.0	20	60	3745	89
	6.0 - 14	2.5	20	65	4630	90
	6.0 - 14	3.3	20	75	5978	92
	6.5 - 14	5.0	20	95	8865	94

Pinout

PIN	PL10S-W, 16S-W, 20S-W Function	PIN	PL16S-12C Function
1	+Output	1	+Output
2	+Output	2	+Output
3	+Sense	3	+Sense
4	+Output	4	+Output
5	Common	5	Common
6	No Pin/PGood option	6	Common
7	Common	7	+V Input
8	+V Input	8	+V Input
9	+V Input	9	No Pin
10	Sequencing	10	Trim
11	Trim	11	On/Off Control
12	On/Off Control		

Options

Remote On / Off Option

Blank	On: Vin or open circuit; Off: <0.4VDC
N	On: open circuit or <0.4VDC; Off: >2.8VDC to Vin

Power Good Option

P	(available on W12C models)